AMERICAN

JOURNAL OF MINING,

Milling, Oil Boring, Geology, Mineralogy, Metallurgy, etc.

GEORGE FRANCIS DAWSON, EDITOR.

PARK BUILDING.

VOLUME I.—MARCH TO SEPTEMBER, 1866.

NEW YORK:

WESTERN & COMPANY, PUBLISHERS AND PROPRIETORS,

37 PARK ROW AND 145 NASSAU STREET.

11.750

620.5
fE574
v.1

INDEX TO VOLUME I.

Editorials.

A.

Air, Compressed, 9. American Science, Status of, 163; Repertory in Germany, 185. Amalgamator, Screw, 248. Anthracite, Value of, Acknowledged, 248. Apologetic, 8; Assays of Nevada Ores, 89.

B.

Barbacoas, Beware of, 136. Belgian Coal and Iron Trade, 297. Brains vs. Hands, 129. Brazilian Exhibition, 169. Boiler Explosion Prevented, 25. Broadway Air Line, 56; Grooving, 168; Another Machine for Grooving, 120. Bullion Remittances, 265. Bureau of Mines, 24.

C.

Cabinet, a Fine, 200. Cable, the Atlantic, 217, 264, 296; Submarine Telegraphs of American Manufacture, 376; Sub-Oceanic, Another to be Laid, 361; Seven More to be Laid, 392. California—Three Dollar Quartz Profitably Worked in, 376; Mint, the, 232; Chinese, in, 312; Flowing Wells in, 312. Capital—More and More Labor Wanted, 248; and Labor Reconciled, 120. Central Pacific Railroad, 9. Chili Copper, 152. Cinnabar Discovery, New, 361; City, Substantial, a, 313. Coal, American, 168; and What Depends on it, 184; Miners, an Overflow of, 265; Supply of the West, 280; Utilization of Refuse, 280; Coaling Station, New, 249. Colorado, 72; Mining Interests, 104; Position of, 9; Admission of, 24; Appointments for, 57; the veto, 120; Coloradians, Good News for, 200; More News for, 297; Comstock Drain, the Great, 88; Statistics, 344. Copper Miners, Grains of Comfort for, 88; Memorial, 9; South American, 169. Cornwall, Further Stoppages of Mines in, 376.

D.

Dangerous Substance, a, 152; Deserved Thanks, 184; Disinfector, Sulphate of Iron as a, 104.

E.

Earthquake, 9. Eight Hour Question, the, 361. Enterprise, Important, 56.

F.

"Fair Play is a Jewel," 201.

G.

Gas from Wood, 152. German Science and American "Vim," 184; German Silver, four millions per annum spent in, 344. Glad Tidings, 185. Gold is King, 265; Silver, Production of, 313. Grand Work, a, 281. Grooving Broadway, another machine for, 120. Gunpowder versus Powdered Glass, 248.

H

Hoosac Tunnel Drill Machines, 57. Horace Greeley on Sodium Amalgam, 169. Hydro-Geology, 360.

I.

Idaho, Mint and Land Office in, 57. Immigration, 281. Indian Insurrection throughout the West, 312; Hostilities, More About, 329. Iron Strike, the British, 344.

L.

Labor Skilled and Unskilled, 361. Land Titles Bill, Julian's, 233. Lands, Mineral, 41. Lead, Native, 217. Loss, a Sad, 201.

M.

Magnetic Observatory for New York, 136. Manhattan Island, Tunnelling, 25. Metallic Currency, Great Waste by Abrasion of, 328. Mexico, the Mines of, 344. Michigan, the Ancient Mines of, 297. Mine Machinery wanted, 152; Legislation, 185; Legislation, Congressional, 296; Miners, Information from, Wanted, 264; Honors to, 345; From Abroad, Great Influx of, 393. Mines of Mexico, the, 344; Shall our, be Represented, 216; Mining Convention, American, 216; National, 41, 56; and Manufacturing Bill, Veto of the, 200; Company, a, Shown Up, 281; Act, How the Coloradians like the New, 328; As an Investment, 360; Reduced to a Certainty, 296; Interest, the, 56; News, 24; Machinery, 104; Situation, a Glance at the, 8; Montana, 40; Moneybags, a Word or so to Old, 344; Mines, Discussion Extraordinary on, 408.

N.

New Mexico, 160. Nitro-Glycerine, 56, 281; Defended, 72; Experiment, a, 88; Experiments, 104; Transportation, 120; Triumphant, 233; Nomenclature of Mining Districts, 248; Novel Project, 136.

O.

Oil, a New Matrix, 136; New Market for, 88; Tunnels, Flowing, in California, 312. Overland Route, the Great, 8; Mail, New, 56; Route to the Gold Regions, 72; Original Papers, 41.

P.

Pacific Railroad, the, 40, 169; Survey, 104, 217; Peat as a Fuel, 312. Petroleum, Why Down, 88; Exempting, 104; Protection for, 120; Phenomena, 136; Fires, Prevention of, 344. Pig Iron, John Bull's Queer Investment in, 328; Platinum, California, 88; Principle, an Old, Newly Applied, 232. Prairies, Timbering the, 217. Precious Metals, Products of the, 232; Protection Needed for Miners and Others, 361. Pumping Engines, Cornish, 217.

Q.

Quartz and Mining, 24. Question, a, Answered, 88.

R.

Rails, Steel, 281; Railroad, Endless Chain 136; Bills, a Rush of, 200. Railways, Wear and Tear of, 328. Refractory Ores and Available Processes, 216. Robbing Peter to pay Paul, 281.

S.

Salt at the European Seat of War, 265. Salutatory, 8. Scientific Papers, Valuable, 120. Scotch Iron Trade, Sad State of the, 264. School of Mines, 24. Slavery in Europe, 297. Slag, a Substitute for Emery, 88. Shower, a Pestilential, 345. Sodium Amalgam Process, the, 120. Steel Superseding Iron, 233. Subscribers, to, 408. Sutor's Mammoth Tunnel, 200. Systematized Labor, Astonishing Results of, 313.

T.

Telegraph, the Russo-American, 217; Sub-Atlantic, the, 281. Thanks, 24; Deserved, 185. Timber for Western Mining Regions, 184; Preservation of, in Mines, 152. Tin 393; Mining British, the Decadence of, 360. Treasury, the Manufacturing and Mining Department of the, 9. Tunnelling, 329; Machine, Improved, 72; Tunnel between England and France, 297. Tunnel, Improved, for Underground Railway, 408. Turpentine, Pulverized, as a Fuel, 104.

W.

Water on the Western Mail Routes, 137. Wens and Mineral Water, 88. Wild-cat, Is It or Is It Not? 280. What About It? 297. Work, a Grand, 281.

Original Papers.

C.

Colorado, Mineral Wealth of, by Dr. R. P. Stevens, 218; Lodes, Ores and Titles, by J. A. H., 378, 394.

D.

Does Mining Pay? by Dr. R. P. Stevens, 105, 121. Geological Scale of Coal, by Dr. R. P. Stevens, 249; Of Rocks in which Gold is Found, by Dr. R. P. Stevens, 201; Table of Distribution of Useful Minerals, by Dr. R. P. Stevens, 326; Gold in North Carolina, by Dr. R. P. Stevens, 313.

L.

Lead Fields of the Upper Mississippi, by J. Vancleve Phillips, M.E., 185, 201, 218, 234, 250, 279, 295, 327, 343, 359, 394, 410.

M.

Mineral Wealth of Virginia, by Dr. E. H. Grant, 10. Mineral Resources of Georgia, by Prof. Paul C. Morton, 265: Mineralogical Sketches of the Counties in Scotland, by Prof. H. Dussauce, 342.

P.

Petroleum, by Professor Frs. E. Englehardt, Ph. Dr., 9, 25, 41, 57.

S.

Salt, by Professor Frs. E. Englehardt, Ph. Dr., 121, 137, 153, 169, 185, 217, 233, 249, 266, 278, 294, 326, 342, 358, 376.

U.

Utilization of Sodium in Gold and Silver Amalgamation, by Professor Henry Wurtz, 393, 409.

Correspondence.

B.

Blackfoot Mines, the, by C. M. D., 89.

C.

Coal, by "A Miner," 233, 249, 265, 281, 313, 329, 345, 361, 393. Dust, Utilizing, by W. F. S., 233. Crosby & Thompson's Process, by J. Weatherbee, 281.

D.

Disintegrating without Crushing, by Geo. B. Walter, 137.

G.

Gardner's Rock Drill, by G. A. Gardner, 297.

I.

Isthmus Canal, the, by W. P. C., 329.

K.

Keweenaw Copper Mines, by Keweenaw, 137.

L.

Live Toad in "Hard-Pan," by W. R., 393.

N.

Nitro-Glycerine Experiments by S. P. Ely, 153; How to Manufacture and Use, by Prof. H. Dussauce, 345.

P.

Processes, About, by "A Constant Reader," 265.

S.

Silver Strike in New Jersey, 219.

Mining Summary.

A.

Abyssinia, 213; Arizona, 6, 20, 36, 68, 100, 131, 149, 163, 181, 244, 260, 277, 293, 308, 357, 389. Austria, 37. Australia, 213.

B.

Brazil, —. British Africa, 261. British Columbia, 7, 20, 69, 101, 116, 132, 149, 165, 229, 245, 261, 278, 309, 341, 373, 389.

C.

California, 3, 19, 34, 51, 66, 83, 98, 116, 130, 146, 162, 178, 195, 211, 227, 242, 259, 274, 290, 324, 338, 354, 370, 388. Canada, 52, 84, 101, 165, 229, 245, 277, 357. Central America, 37. Carolina, see North Carolina. Cocos Island, 229. Columbia, 68, 117. Colorado, 5, 20, 35, 51, 67, 84, 98, 116, 131, 149, 163, 180, 196, 212, 227, 242, 258, 272, 290, 307, 323, 341, 354, 370, 386. Connecticut, 116.

E.

Ecuador, 213.

F.

Faulkland Isles, 13.

G.

Georgia, 52, 197, 261, 373, 389, 405.

I.

Idaho, 6, 20, 34, 82, 99, 116, 131, 148, 163, 180, 197, 212, 260, 277, 309, 372, 324, 356, 388. Indiana, 6, 68, 213. Iowa, 213; Illinois, 132, 196, 244, 261, 276.

K.

Kansas, 6, 324; Kentucky, 52, 227, 260, 290, 324.

L.

Louisiana, 101, 227, 389.

M.

Maine, 52; Mexico, 13, 21, 52, 69, 101, 213, 245, 293, 373; Michigan, 19, 52, 84, 114, 131, 149, 165, 180, 210, 227, 242, 261, 276, 307, 322, 338, 356, 373, 388, 404; Minnesota, 6, 20, 212, 227; Missouri, 165, 210, 260, 290, 309; Montana, 4, 20, 68, 84, 99, 114, 131, 149, 163, 181, 196, 212, 227, 242, 253, 276, 301, 324, 341, 371, 387, 405; Massachusetts, 6.

N.

Nevada, 2, 18, 36, 50, 66, 83, 100, 114, 131, 147, 163, 180, 194, 211, 227, 244, 259, 275, 290, 306, 323, 340, 350, 372, 387, 402; New Mexico, 116, 131, 213, 227, 242, 261, 276, 309, 357; New Grenada, 7, 21, 69, 117, 278; New Hampshire, 52, 165, 227, 293; New Brunswick, 132, 261; Newfoundland, 293; New Jersey, 165, 227; New Zealand, 213, 229, 293; Nicaragua, 13, 21, 229; Nova Scotia, 13, 36, 213, 229, 261, 293, 325.

O.

Ohio, 52, 68; Oregon, 6, 20, 36, 101, 131, 213, 227, 244, 293, 309, 341, 357, 372, 388.

P.

Pennsylvania, 6, 50, 67, 116, 213, 227, 276.

R.

Russia, 229.

S.

Switzerland, 213.

T.

Tennessee, 324.

U.

Utah, 36, 68, 132, 149, 165, 213, 277, 293, 309.

V.

Virginia, 165, 197, 227, 277, 292, 324.

W.

Washington Territory, 68, 213, 309, 373.

Oil Summary.

A.

Alabama, 21, 101.

B.

British Guiana, 85.

C.

California, 21, 37, 52, 85, 101, 118, 133, 149, 165, 181, 197, 213, 229, 245. Canada, 21, 38, 52, 70, 101, 117, 133, 165, 245. Colorado, 21, 101. Cuba, 52.

W

England, 182.

G.

Georgia, 165.

H.

Holy Land, 21.

I.

Illinois, 70, 197, 294. Indiana, 229. Italy, 21.

K.

Kentucky, 21, 52, 118, 198, 229, 294.

M.

Michigan, 52, 70, 101, 261. Maine, 197. Missouri, 21. Mississippi, 21.

N.

New York, 85, 165. New Jersey, 261.

O.

Ohio, 21, 69, 149, 165, 197, 229, 261.

P.

Pennsylvania, 21, 37, 52, 69, 85, 101, 217, 133, 149, 165, 181, 198, 213, 229, 245, 261, 278, 294.

R.

Russia, 85.

T.

Tennessee, 21, 149, 245, 294. Texas, 70.

U.

Utah, 37, 52, 181.

V.

Virginia, 52, 70, 149, 165, 181, 294.

W.

Wisconsin, 403.

Miscellaneous.

A.

Aerolites, 146; All Sorts, 23, 66, 108, 125, 140, 156, 173, 189, 205, 222, 237, 251, 268, 285, 300, 317, 331, 349, 365, 380, 396, 413; Alloys, Composition of, 70, 73; American Iron, 177; Cast Steel, 326; Amalgamator Screw, 248; Anthracite, price of during forty years, 397; Coal Trade, 91; Archeological Discovery, 193; Assay, prices of chemicals used in, 59; Assaying Implements, 59; Atmospheric Pressure in Mines, 97; Resistance to Cars, 178; Australia, Gold Mines of, 306; Australian, A Petrified, 242; Amalgamates, new, 401,

B.

Belgian Coal Mines, 289; Bessemer Steel, more about, 273; Blast Furnace Gasses, Separation of dust from, 358; Buddhism in America, 53; Bullion Statistics, British, 261; Borax, 226; Brazil, Agassiz's Geological Discoveries in, 214; Brazil, Discoveries in, 370; British Mineral Products, 397; British Channel to be Tunnelled, 208.

C.

California, Granite quarries, 114; Auriferous Rocks, The Age of the, 273; Iron Ores and Manufactories in, 113; Canadian Mineral Lands, 386; Carbonate of Soda, 156; Cinnabar Discovery, A new, 361. Coal: Asia Minor, 189; Desulphurising, 2; New Machine for Cutting, 301; Oil, 173; Russian, 38; Resources of the World, 253; Statistics, 54, 178; Statistics of Europe and America, 397; Supply, 1; Summary, 38; Supply, Effect of the War upon, 273; Veins, 365; Washing Machine, 369. Comstock Lode, The, 189; Silver Mines, 70; Constantinople and Smyrna Railway, 66; Conservation of Force, The, 337; Copper, 92; Copper Making direct from the ore, 358; Rolling, 261; Rollers, Coal Cutters, &c., new, 405; Mount Baker, Attemptod Ascent of, 406; Miners, Interesting to, 154; Smelting on the Pacific, 70; Trade, The, 193; Smelting, more Improvements in, 397, 401; Corrosion in Steam Boilers, Avoid, 54; Columbia Basin, how the deposits were discovered, 133.

D.

Desulphurizing Furnace, New, 385; Diamonds in the Southern States, 227; Disintegrating Quartz, without crushing, 113, 138; Donations to the Public by Inventors, 22.

E.

Earth, What is the shape of, 34; Its crust incessantly changing, 241; Emery, 9; Electricity, Cheap, 258; Explosive Substances, 322; Experimental Discoveries, Singular, 324; Experiment, Curious Scientific, 2.

F.

Fire Brick and Crucibles, 257; Fire-damp in Mines, Destruction of, 130; Force, the Conservation of, 337; Fossil, a Monster, 140; Frog, a Living, in the Palæozoic Rocks, 325; Fuel, a New, 365; Furnace, a Cheap, for Chemical Experiments, 241; French Exhibition, Curiosities of the, 156; Freezing Agent, a New, 145; Furnaces, Improved, 162.

G.

Geological Discovery, 349; A Great, 337; Gold, 26, 82; And Silver Amalgamating, Improvements in, 71; New Solvents for, 81; Gold Hill, Rich Diggings, new, 401; Golden Center of the Earth, 129; Gun Cotton, Improvements in, 166.

H

Hagan Process for Treating Ores, 125; Desulphurizer, The, 401: Hematite Ores, 331: Hoosac Tunnel, The, 51; Hydrogen, Peroxyde of, 159.

I.

Iron, 81; Filings, Magnetic, 226. Improvements in Manufacture of, 130; Hardening of, 66; Manufacture of, 274; Ore, A new, 189; Preserving Agent, A new, 209; Plating Thick, 353; Preserver, New, 274; Smelting, 210; And Steel, Manufacture of, 136; Smelting in Colorado, 107; Working in the Olden Time, 337; Vessels, How to Depolarize, 369. Idaho, New Route to, 226; Invention, Curious and Valuable, 18. Isinglass, A Mountain of, 354; Italian Gold Mines, 395.

J.

Journal of Mining Office, 33; Journal of Mining, What is Said of by the Press, 253, 301.

L.

Land of Legendary Wealth, 33; Lower California Negotiation; Ledge, A Queer, 357; Luck, Good and Bad Luck, 413; Locomotives, French, 409.

M.

Magnesium, 54, 116; Amalgam, Curious Properties of, 109; Magnetic Discovery, 289; Malachite, Stream of, 226; Mastadon, Tooth of a, 358; Metallic Sand, 146; Metallurgy, Historical Sketch of, 108; Important Discoveries in, 325; Metals, Transmutation of, 22; Meteor, a, 144; Michigan, the Ancient Mines of, 297; Mineral Land Act, the, 290; Productions of Great Britain for 1865, 380; Mineralogy of South America, 353; Mining, Ancient, 193; Regions, Magnitude of Our Western, 9; Results of Deep, 257; Miners' Hospital, 177; to, 233; Moon, What is the Use of the, 77; Montana, 40; Mount Cenis Tunnel, the, 54; Motive Power, a New, 351; Mineral and Other On Dits, 23, 39, 91, 108, 125, 140, 156, 172, 189, 204, 222, 300, 317, 349, 363, 380, 396.

N.

New Brunswick, 349; New Almaden Mine, New Discovery at, 54; New South Wales, Geology of, 385; Niagara of the West, 369; Nitrate of Soda, 125; Nitro-Glycerine, More About, 74; The Power of, 261; Non-Explosive Powder Question, The other side of the, 306.

O.

Oceans, Joining the Great, 305; Oil, Better than, 301; Gas, 290; Testing Mineral, 2; Ophir, Vestiges of the Ancient, 326; Ores, Greasy, 353; Ore Dressing Machinery, Improved, 241; Oxygen, What is, 66; Oxalic Acid from Sawdust, 274; Oxide of Magnesium Light, New, 314.

P.

Pacific Coast, Mineralogical View of, 261; Railroad, 46; Railroad Report, 294. Patent Claims, 13, 23, 39, 55, 74, 91, 108, 124, 140, 156, 172, 188, 204, 221, 236, 251, 269, 283, 300, 317, 331, 347, 363, 380, 396; Office Report, English, 385. Peace on the Plains, 162. Peat in California, 353. Petroleum, New Use for, 358. Phenic Acid as a Disinfectant, 145. Phosphorus in Iron and Steel, Test for, 204. Platinum, California, 88. Plumbago, Recent Discoveries of, 14. Precious Metals, Yield of the, 209; Pre-Adamite Race, Extraordinary Relics of a, 326. Process, a New, 353. Pressure, Atmospheric, in Mines, 97. Palestine, Explorations in, 65. Poetry: "Excelsior," 386; Pliocene Skull, to the, 358; King Carbon, 402.

Q.

Quartz Crusher, a New, 140; Mining, Re-action in, 92.

R.

Resources of our Country, 53.

S.

Sardinia, Mining in, 325. Salt at the European Seat of War, 265. Saltpetre Cave, Great, 289. Saxony, the Silver Mines of, 258. School of Mines, 24. Science, a Century of, 161. Scientific Brevities, Special: 14, 39, 54, 74, 108, 124, 140, 156, 172, 188, 204, 221, 237, 251, 268, 300, 317, 331, 349, 365, 396. Scientific Meetings: Polytechnic, 121; Society for the Advancement of Science and the Arts, 153, 169, 185, 201, 217, 233, 249, 265. Scotch Iron, 133. Silver from Lead, Extracting, 50, 245; Extraction, Patera's Process, 53; Smelting Furnaces, 97. Sodium Known to the Ancients, 178. Amalgam, 107; Condensed Facts as to, 225. Process in Nova Scotia, 385; Fine Specimens, 337. Special Notices: 14, 91, 122, 205, 283, 297, 331, 380, 396. Slags, Blast Furnace, Granulation of, 273. Substitute, a, for Emery, 88; to pulverize, 325; Steel making, Improvements in, 129; Columns of, 162. Story of Wonderful Discoveries, a, 285. Sulphur Well, a, 86. Sulphate of Iron as a Disinfectant, 104. Sutro's Mammoth Tunnel, 200. South Africa, Riches of, 336; Sulphur, Deposit, Immense, 405.

T.

Tariff on Metals and Minerals, 210. Thunderbolt Crusher, the, 50. Tin, Banca vs. British, 294. Tunnel, Proposed, under the Channel, 305. Tunnelling Machine, a New, 338. Turkey, Mineral Resources of, 257.

U.

United States, Important to the Interests of, 401.

V.

"Valley of Diamonds," a New, 145. Vermillion Gold Fields of Minnesota, 38. Volcanic Phenomena, Remarkable, 30.

W.

Wad, a Manganese Ore, 165. Work, a Valuable, 337.

Y.

Yellow Stone, the, 317.

Machinery, Descriptions of.

C.

Chloride of Sodium Process, Wyckoff's, 177: Concentrator, 193.

E.

Engine, Steam, Brayton's Generator and Engine, 333: Hicks, the, 349: Hubbard & Whittaker's Horizontal, 396; Little Giant, the, 65; Portables: Andrews', 227; Champion, 380; Eagle Works, 128; Ericsson, Caloric, 160; Hoadley, J. C. & Co., 209; Improved Plantation, 365; Reed & Cogswell's, 81; Schenck's, J. R., 144; Wood & Mann, 113; Description of Steam Pumps, Campbell & Hardick Bros., 401; Root's Double Piston Square Engine, 412.

P.

Petroleum Test, 57.

Q.

Quartz Mill, "Little Giant," 17.

R.

Rock Drill, Gardner's, 1.

S.

Salt Evaporators, 169, 278, 342. Spring, Governor Pickering's Improved, 241. Steam Pumps: Andrews' Anti-friction Centrifugal, 353; Cameron & Co.'s, A. S., Special, 337; Campbell & Hardick Bros., 305; Clayton's, James, 273; Earle's Patent, 369; Guild, Garrison & Co.'s, 257; Sewell & Cameron's, 385; Worthington's, H. R., 289: Woodward's Patent Duplex, 321; Turbine Water Wheel, Reynold's, 71.

Book Notices.

The Battles of the World by Rev. J. Douglas Berthwick, 89. California Minerals, by Prof. Wm. P. Blake, 345. On the Application of Disinfectants in arresting the Cattle Plague, by Wm. Crookes, F. R. S., 345. Gran Almanaque Mexicano y Directorio del Commercio, by Eugenio Maillefert, 377.

Tabular Matter.

A.

Anthracite, price of, during forty years, 397.

D.

Directories of Mining Companies: Names, Number of Shares, Capital, Situation of Property, Secretary and Place of Business: Copper, 217; Gold, 214; Lead, 214; Petroleum, 43; Silver, 215; and elsewhere.

Market Reviews and Reports.

Market Review, New York, 11, 26, 46, 58, 75, 90, 105, 122, 138, 154, 170, 186, 202, 219, 236, 250, 266, 282, 297, 314, 329, 345, 361, 378, 394; Foreign, 219, 236, 266, 282, 297, 314, 330, 346, 362, 379, 395, 411.

Metal Market, New York, 12, 26, 46, 59, 77, 90, 107, 124, 138, 154, 170, 188, 202, 219, 236, 251, 267, 283, 315, 330, 346, 362, 379, 395; London, 12, 26, 46, 60, 76, 90, 107, 124, 138, 154, 170, 188, 202, 219, 236, 251, 267, 283, 315, 330, 346, 362, 395.

Mining Companies Reports, 73, 89, 219, 297, 313; Statements, 89, 105, 122, 138, 153, 170, 186, 202, 219, 234, 251, 266, 329, 393.

Prices of Assaying Implements, 155; and Chemicals, 155.

Sales of Ores in England, 122, 140, 154, 170, 188, 202, 221, 236, 251, 267, 283, 315, 331, 346, 362.

Stocks, Daily Quotations of, 59, 78, 92, 106, 123, 139, 155, 171, 186, 203, 220, 235, 251, 268, 284, 299, 316, 348, 364; San Francisco, 12, 26, 46, 58, 75, 90, 107, 122, 138, 411; (Nevada), 154, 172, 188, 204, 221, 236, 251, 267, 283, 315, 331, 363, 380; United States, 62, 78, 91, 124, 140, 156, 172, 188, 204, 221, 237, 251, 269, 285, 300, 317, 331, 363.

Engravings.

C.

Chloride of Sodium Process, Wyckoff's, 177; Concentrator, 193.

E.

Engine, Steam: "Little Giant," 65; Hubbard and Whittaker's horizontal, 396; The Hicks, 349; Brayton's Patent Steam Generator and Engine, 333. Portables: Reed & Coggswell's, 81; Wood & Mann's, 113; Eagle Works, 128; Jacob R. Schenk's, 144; Ericsson Caloric, 160; J. C. Hoadley & Co's, 209; Andrews, 227; Improved Plantation, 365; Champion Portable, 380; Root's Double Piston Square, 412.

J.

Journal of Mining Office, 33.

L.

Low Water Detector, Ashcroft's patent, 97.

P.

Park Building, 33; Petroleum, 41, 57; Pumps, Steam: Guild, Garrison & Co.'s, 257; James Clayton's 273; H. R. Worthington's, 289; Campbell, Hardick & Bro.'s, 305; Woodward's Patent Duplex, 321; A. S. Cameron & Co.'s Special, 337; Andrew's Anti-Friction Centrifugal, 353; Earle's patent, 369; Sewell & Cameron's, 385; Campbell & Hardick Bros., 401.

Q.

Quartz Mill, "Little Giant," 17.

R.

Rock Drill, Gardiner's, 1.

S.

Salt, 169, 278, 342; Spring Governor, Pickering's improved, 241; Stone Channelling Machine, double-gang, 49.

T.

Telegraph Cables, 264, 377, 392; Trichina, 249; Turbine Water Wheel, Reynold's, 71.

Advertisements.

Andrews, Wm. D. & Bro., Oscillating Engines 365.

Barber & Wyckoff, Ore Reducers, 173, 205.
Bishop Gutta Percha Co., Telegraph Cables, 333.
Brayton's Steam Generator and Engine, 333.
Bureau of Mines, American, 15.
Bullios Consolidated Mining Co., 95, 352.

Cameron, A. S., & Co., Steam Pumps, 352.
Campbell, Hardick & Bro.'s, Steam Pumps, 318.
Champion Jos., Steam Engines, 398.
Coghlan D., Mining and Civil Engineer, 142.
Clayton's J., Patent Steam Pump, 285.

Dammer's Jas. Cancelling Stamp, 285.
Dalton's Knitting Machine Co., 413.
Degen, Taft & Lee, Quicksilver, 15.
Browne, Prof. Chas., Rensselaer Polytechnic Institute, Troy, 333.
Duncan, Sherman & Co., Bankers, 191.
Ducktown Copper Mine, 255.
Dussauce, Professor H., Chemist, 79, 400.

Empire Sewing Machine, 93, 285.
Engelhardt, Frs. E., Analytical Chemist, 366.
Ericsson Caloric Engine, 191.

Gomez Submarine Electric Fuse, 15.
Grovesteen & Co., Pianos, 301.
Guild & Garrison, Steam Pumps, 269.

Hitchings, J. A., Gold Lands, 365.
Hoadley, J. C., & Co., Portable Steam Engines, 317.
Holladay, Ben., Express Company, 94.
Hubbard & Whittaker, Steam Engines, 413.

Incas Silver Mining Co., 93.
Incrustation of Boilers, Winans, 15.

Jay Cooke & Co., Bankers, 15.
Journal of Mining, Prospectus, 47.

Kavanagh & Decker, Billiard Tables, 99, 113.
Keith, B., Desulphurizing Process, 173.
Kerosene & Gas Stoves, 301.

Maynard & Tiemann, Mining Engineers, 269.
Mining Magazine, the, 191.
Murphy, John P., Mineral Lands, 399.

New Capitol at Albany, 319.
New York Starch Gloss Co., 318.
Ninth National Bank Report, 15.

Palmer, Cyrus, Machinery, 15.
Pohle, Julius J., Analytical Chemist, 15.
Petroleum Fire-Proof Iron Tank Storage Co., 96, 239.

Reed & Cogswell, Consulting Engineers, 142, 174.
Reid, Thos., & Co., Coffee, 301.
Remington & Sons, Revolvers, 94.
Rock Drill Co., New York, 15, 31.
Rossie Iron Works, Iron Ore for Sale, 173.

School of Mines, Columbia College, 16.
Shaw Mine, the 125.
Stewart, Jas., & Sons, Turning Lathes, 269.
Stewart's, James, Son, 319.
Stewart, Adam, Turning Lathes, 366.
Taylor & Scott, Mining Engineers, 15.
Texas Gold Mining Co., 79.

Unity Gold Mining Co., 79.

Van Nostrand, D., 16, 142.
Van Santvoord, J., Patent Agency, 157.

Western & Co., Books, 109; Printing, 270.
Winans, Boiler Incrustation, 15.
Williams, Chas. P., Analytical Chemist, 157.
Winchester's Hypo-phosphites, 15.
Winter's Circular Saw Mill, 269.
Woolworth & Barton, Overland Forwarders, 31.
Wood & Mann, Steam Engines, 191.
Woodward Steam Pump Manufacturing Co., 333.
Worthington H. R., Mining Pumps, 301.

Yale College, Mining Department, 285.

AMERICAN

Journal of Mining,

Milling, Oil-Boring, Geology, Mineralogy, Metallurgy, etc.

VOLUME I.
NUMBER 1.

NEW YORK, MARCH 31, 1866.

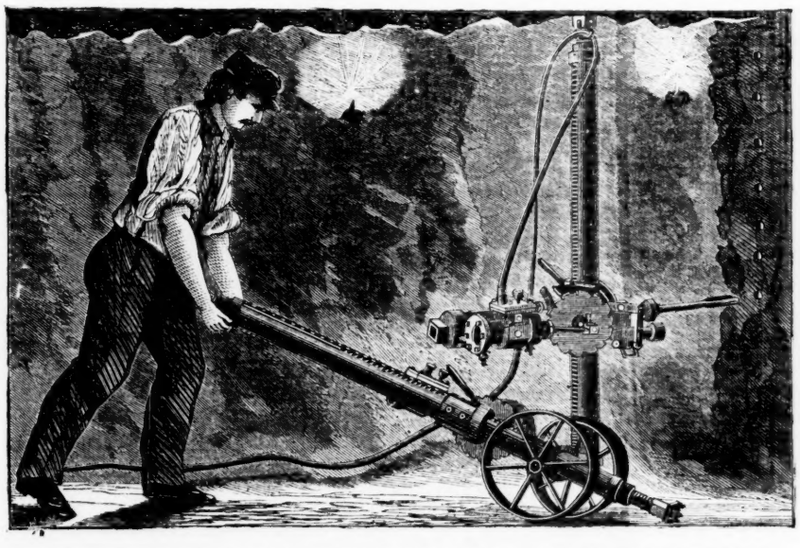
$4 A YEAR IN ADVANCE.
SINGLE COPIES TEN CENTS.

NEW ROCK DRILLING MACHINES.

Herewith we present an excellent illustration, made by one of our artists, of the latest style of these machines, built expressly to work in confined spaces. They are very compact, measuring—independent of supporting column, etc.—30 inches in length by 12 inches breadth and depth, and weighing only 250 lbs. One man can move and adjust them to the work, as seen in the engraving. The supporting column is held firmly in place by setting out the jack-screw, and thus bracing it between the top and bottom of tunnel, or the sides of shaft, and the machines are raised and lowered by a gear working in the rack on side of column, while the attachments to the column form a universal joint and allow the machines to work at any angle. They are automatic; one engineer can attend to a gang of four or five, working on the same face. Six of them can be worked in a heading four and a half by six feet; and in a shaft six by twelve feet, eight of them can be worked at once. In a railroad, or other large tunnel, an increased number of machines can be operated with, being supported and moved upon a carriage running on rails.

In the Mount Cenis tunnel no less than nine of the comparatively cumbersome French machines are used in the heading, which measures eight by eight feet. The simplicity and freedom of this new American Rock Drilling machine from liability to break any essential part, must commend it to parties remote from repair shops. The Patentee invites the closest scrutiny of machinists, engineers, miners, and all interested in rock work, and for their benefit we may mention that one of these machines can be seen at work any hour of the day, drilling into a block of Rockport (Mass.) granite—the hardest granite known. The blow is struck by the drill being projected by the reactive force of an india rubber spring against the rock, the drill being as free from the working machine at the instant of striking, as an arrow shot from a bow; 300 hundred blows per minute can be given with the utmost force the steel-drill point can bear. The cross-head to which the drill is attached is drawn back; and thus compressing the spring by a cam rivetted directly to the piston rod of an oscillating cylinder, the drill point has an automatic turning motion, and the entire machine an automatic feed, self-regulating, according to the varying hardness of the rock; the machine working equally well with the same adjustment when drilling on flint or on granite, cutting two inches deep per minute, or on mica, slate, sandstone, or other softer rocks, cutting four and six inches per minute. They drill equally well at any angle, and with them holes can be put in the most difficult places with great facility.

The patentees claim that they are the only power drills that have ever done any regular work in this country, excepting, however, the old fashioned vertical drills—their larger machines for outside cutting, having been worked for several years on railroad and canal excavations, operated by four-horse engines drilling four, six and eight-inch diameter holes, and doing the work of fifty men. They also claim that theirs are the only machines now known that can drill other than vertical holes on regular work without continual breakages; the other machines, without an exception, feeling the concussion of the blow in their most vulnerable points, and requiring constant repair. Rock-drilling, it is claimed, can be done with these machines for one-tenth the cost of hand labor, and in one-tenth the time. Although the patentees have had their larger machines—driven by steam—at work for several years, and also their hand machines for mining, it is only lately that a suitable power for work in mining has been utilized. Compressed air has been successfully employed for over three years in the Mount Cenis tunnel, and for eighteen months in English mines, and the past year in Pennsylvania. The New York Rock Drill Company having lately perfected and brought into use the present machine, containing several novelties, they are prepared to supply all demands for machines of every sort, as per their advertisement in another column. The Company are prepared to furnish machines with gangs of drills for splitting granite, marble, etc., also channelling machines for marble, etc., when blasting is to be avoided. They also have machines for cutting "bearing in" in coal; they also manufacture the Gardner Patent Drill Point, used in their machines, and especially desirable for sinking oil wells, making round holes, requiring no reaming, and cutting faster than any other point. Miners, railroad contractors, engineers, and all interested, are invited to see the mining drill operating daily in New York, at the machine shop of Sterling & Kerr, 344 and 346 West Twenty-fourth street—West of Tenth avenue.



GARDNER'S PATENT ROCK DRILLING MACHINE FOR MINING PURPOSES.

DRIVEN BY STEAM OR COMPRESSED AIR. G. A. GARDNER, PATENTEE, NEW YORK.

Coal Supply—Interesting Figures.

At a recent meeting of the Paris Société des Ingenieurs Civils, M. Simonin presented an interesting "note" on the coal supply question. Endeavoring to take account of the probable duration of coal in the world, M. Simonin deduced statistics, showing that during the last half century the production of coal has doubled nearly every fifteen years in Belgium, France and England; every ten years in Prussia, and about every five years in the United States. In support of this opinion M. Simonin cited the following data: In England, the production was, in 1852, 50,000,000 tons, while it amounts, in 1864, to 93,000,000, having almost doubled in twelve years. In Belgium, the extraction amounted, in 1845, to 3,500,000; fifteen years later—that is in 1860—the same country had attained a total of 7,500,000 tons, or more than double; while in 1863 the production had been further carried to 10,000,000 tons. In France the production was, in 1843, 3,700,000; sixteen years later—that is in 1859—it had reached 7,500,000, while in 1865 it had further increased to 11,000,000 tons. M. Simonin thinks that the process of doubling the production will probably be effected in future in shorter periods; he considers that he is justified in assuming this, not only by the results indicated, but also by the necessarily progressive developments of industry. Twelve years since, engineers, in endeavoring to render account of the probable duration of known coal resources, and basing their opinions on the then existing totals of consumption, did not anticipate the exhaustion of coal before 1,000 or 2,000 years; but now, with the theory of doubling in the production every fifteen years, M. Simonin looks for the exhaustion of coal supplies of England in a period of two centuries only. In support of this conclusion, M. Simonin pointed to the opinions enumerated on the subject by Sir. W. Armstrong in 1863, and Sir Roderick Murchison in 1865. M. Simonin does not think that the French and Belgian collieries will have a longer duration than those of England; the coal fields of the United States may, in consequence of their greater extent, last five hundred or perhaps one thousand years, but on the whole, M. Simonin foresees the exhaustion of all the coal resources of the globe.—*London Mining Journal.*

Nitro-glycerine for Blasting.

The *Berg und Hüttenmännische Zeitung* states that among other disadvantages of Nobel's nitro-glycerine is the fact that it freezes at a temperature very probably above 92 deg. Fahr. It is said that even at a temperature of 43 deg. to 46 deg. Fahr., the oil solidifies to an icy mass, which mere friction will cause to explode. It is probable, however, that the freezing point of the oil lies somewhat lower than is here stated, though as yet no exact determination of the freezing point of the oil has been made. A newspaper from Hirschberg, in Silesia, gives a sad account of an accident caused by the frozen oil exploding by friction. Nitro-glycerine is there being used in making a railway tunnel. It was kept in glass vessels, packed in straw and placed in baskets, each vessel containing one-fourth to one-eighth of a hundred weight of the oil. For several days the oil had been frozen. It was carefully handled, and pieces were separated by means of a piece of wood and put into the bore-holes, and it was found that the frozen nitro-glycerine exploded quite as well as the fluid. One day an overseer at the shaft hit on the unlucky idea of breaking into pieces with a pick a seven or eight pound lump of the frozen nitro-glycerine. The blow caused the mass to explode, and the unfortunate man was blown up into the air, and fell back into the shaft, some forty or fifty feet deep, while two workmen who were making cartridges a short distance from him luckily escaped with slight injuries.

Desulphurizing Coal.

Mr. Charles F. Dennet, who for twelve years was the active agent of the Colt's Fire-arms Factory Company in this metropolis, is about introducing a new method for the treatment of coal, which has been pronounced a decided success. The coal prepared by the new process, which is very simple and cheap, is said to be far superior to coke for melting iron, etc. A much hotter fire can be made with it than with coke. Cast-steel heated by coal thus treated has been welded without the use of borax or other ingredients. Pig-iron which has proved too hard, has been found to yield and produce as good work as turned out with some of the best brands of iron. Crystallized iron, after melting once or twice in a cupola with the desulphurized coal prepared by the new art, has been found to work exceedingly well. The whole apparatus and ingredients to treat 100 bushels of coal can be put up for from £5 to £10, and it is stated that 60 bushels prepared by this process give as much heat as 85 bushels of the best coal not so prepared. The coal burns with a bright and violent blaze, and for family use effectually gets rid of the smoky, smouldering fires, and substitutes one of a bright and cheerful character. To smiths and manufacturing establishments, where large and strong fires are kept up, it is proposed to grant rights for usage at such low rates as to insure its general adoption, and do away in a great measure with the smoke nuisance that is so injurious everywhere.—*Mechanics' Magazine.*

Testing Mineral Oils.

The mineral oils used for illuminating purposes are usually tested, either by directly measuring their inflammability or by determining their density. Both these methods are inconvenient, and MM. Salleron and Urbain propose to substitute for them the measurement of the tension of the vapor of the oils—the tension of the vapor of any oil being of course proportional to its volatility, and therefore to its inflammability. In a recent communication to the Academy of Sciences of Paris, these gentlemen describe an apparatus by which the tension of the vapor of a mineral oil may be very readily determined, and they accompany this description with "a table of the elastic forces of one and the same oil taken as a type, so that knowing, on the one hand, the tension of the oil to be tested corresponding to a given temperature, and, on the other, the tension at this temperature of the typical oil, by comparing these numbers the value of the specimens examined can be deduced." This method is simple and convenient, and at the same time much more delicate than the methods previously in use.

Curious Scientific Experiment.

According to the Paris correspondent of the *Chemical News*, M. Cauderay has recently described a very interesting experiment. He introduces an electro-magnet into the circuit of a galvanic pile, and breaking the circuit at any point, places the ends of the two conducting wires, separated the one from the other, in a box containing metallic filings, such as silver, copper, brass, or iron. The metallic particles will, of course, complete the circuit. If, now, one of the conducting wires be slowly raised, a small chain, formed by the juxtaposition of the metallic particles, will be drawn out, and if the experiment be made with great care, every particle in the box can be drawn out in one long chain. The author states his opinion that the adhesion of the particles is not due to magnetization, but it is the result of a sort of autogenous soldering by a superficial fusion of the metallic particles. The same author has shown that metallic filings offer very great resistance to currents of dynamic electricity, and upon this principle constructs a new and very cheap rheostat.

Mining Summary.

Nevada.

The Comstock.—From recent Virginia City correspondence of the S. F. *Bulletin*, we make the following interesting excerpt: "The Hale and Norcross Mine is situated between the Savage and Chollar-Potosi companies' mines, and apparently upon a *break* in the lode, for both the Savage and Chollar-Potosi companies have explored fine deposits of ore in their mines, while the Hale and Norcross, until recently, have never met with encouraging prospects. The ore explored is in the 700 feet, or lower level of this mine, about 100 feet north, and about 340 feet east from the bottom of the 250 feet deep incline, which connects with the vertical engine shaft at the 535 feet level. This incline follows the dip of the lode at an angle of 45 deg. east, and presses through a diorite and carbonate of lime formation which lies between the west clay wall of the lode and the felspathic greenstone composing the solid foot wall, or Mount Davidson rock. From the top of this incline a drift is run directly east a distance of about 80 feet, showing the west clay wall, a short distance east from the incline, and exploring part of the lode some 70 feet across. Here water prevented further drifting for a time, and a drift was commenced in the lode about 40 feet east from the foot of the incline. This drift was continued and run about 160 feet south into the Chollar-Potosi Company's ground. No pay ore was met with until they had drifted some distance past their south line, and at the same time Hale and Norcross stock went up from $400 to over $1,000 per foot, the company and outsiders being given to understand that the ore which was hoisted to the surface and choice pieces of which were sent to the company's office, came from the Hale and Norcross mine —"over the left." The fact "long known to certain parties," that the ore found was altogether in the Chollar-Potosi Company's mine, soon became public, and the consequence was that Hale and Norcross stock went down with a crash below the old standpoint of $400. It was not two weeks after this extraordinary development that the company concluded to exchange superintendents, and accordingly S. Moore, the then foreman of the mine, was chosen to superintend the company's mining affairs. Mr. Moore, having charge of the mine, found the ground south of the east cross-cut pretty well explored, and concluded to explore the north mine. A drift was at once commenced about 39 feet from the foot of the incline, and run north to within about 90 feet of the Savage Company's south line. From here a drift was run a short distance west and the foot wall of the lode was explored. From this point a drift was run directly east some 340 feet across the lode, and it is in the east end of this drift that the real discovery has been made within the last month. The lode as explored by this cross-cut is about 340 feet in width, measuring from foot to hanging wall—the western 250 feet exploring a worthless mixture of vein matter, while the eastern 90 feet press through a body of quartz, of which about 18 feet is fine chloride of silver ore, paying from $40 to $50 per ton on an average. This stratum of ore corresponds in character and appearance with the valuable deposit of ore found in the eastern and bottom works of the Savage mine, which is about 700 feet north of the Hale and Norcross north cross-cut. As this body of ore in the Savage mine, "commonly known as the North Potosi chimney," has a southerly dip, and is explored by the North Potosi north branch tunnel and cross-cuts, at a depth of nearly 300 feet, it was reasonable to suppose that the Hale and Norcross would get it at a great depth, and this company have evidently struck the top of it in the crescent above referred to. There can be no reasonable doubt that the stratum of quartz explored by the North Potosi north branch tunnel and cross-cuts, is the same as the deposit of quartz, and one which has recently been developed in the 700-feet level of the Hale and Norcross mine. I come to this conclusion for several reasons, the chief ones being—1st. That the stratum of quartz traced in the North Potosi works corresponds with that in the north cross-cut of the Hale and Norcross. 2d. It lays against the hanging wall of the lode in the North Potosi works as well as in the Hale and Norcross; and 3d. Its dip as shown in the North Potosi would bring it about where it is now found in the Hale and Norcross, say about vertically under the Mechanic's Mill and south of the Gould and Curry Bonner shaft. There appears to be a large mass of porphyry lodged in this part of the fissure, which runs in a point north and south near the Savage and Chollar-Potosi line, separating this east part of the lode from the west, thus crowding this stratum way east, and hence the extraordinary width of the lode from wall to wall at this point where the porphyry, "commonly termed horse," takes up the greater part of the fissure. If I am to judge from developments made in some parts of the great silver veins in Central Mexico, at a similar depth, I conclude that the great horse found in the Hale and Norcross mine will run out entirely at no great depth below their present 700-feet level; that the foot and hanging walls enclosing the lode will come closer together and become more regular as depth is attained; while a well defined body of ore will no doubt fill the fissure from wall to wall. At present the company is busy exploring the newly discovered ore deposit north and south, and also towards the surface. This deposit of ore is now explored and cross-cut at a distance of over 80 feet north and south. The ore strata, with the quartz lying to the west of it, has all the appearance of making a fine and very extensive body of valuable ore in the next level below, and we may reasonably expect that Hale and Norcross will, at no distant day, occupy a most desirable part of the great Comstock lode. Of course the present shaft, incline and hoisting works are not in proper place for much deeper and convenient working of the mine; though as the Savage and Chollar-Potosi companies are both sinking shafts of large dimensions, and putting up heavy hoisting apparatus and pump, the Hale and Norcross company can no doubt explore their mine to a desirable depth through one of these shafts, and for comparative little expense too. . . . . The winze sunk on the North Potosi chimney in the Savage Mine has also improved very much within the last week. The ore, in drifting about 30 feet south and east from the bottom of the winze, is coming in fine, and is of much the same character and quality as that found in the Hale and Norcross lowest level. The future prospects of this company are certainly most promising, and it is to be hoped that they will soon get rid of the black mailing lawsuits which are now pending. . . . . The "strike" announced some time ago in the Sierra Nevada Company's mine is of little or no importance. The small seam of ore disclosed is in the 150 feet level of the mine, and about 300 feet north of the engine shaft. This ore was long known to exist there, and is therefore nothing new. Had it been found in the 4 10 or lowest level of the mine, it could then be regarded as being of considerable importance. . . . . On Gold Hill also, some of the leading mines have lately disclosed valuable and extensive bodies of ore in deep levels. The Yellow Jacket boys have partially explored a stratum of ore several feet wide in the lower level of the south mine. This ore is found in the drift west from the engine shaft, lying against the hanging wall of the lode. The company have over 200 feet of unexplored ground between this cross-cut and the next claim south; and as they are now vigorously exploring south, there are fair prospects of a decided improvement in that direction, for we know that the Kentuck and Crown Point mines both show fine ore on nearly the same level with the Yellow Jacket. . . . . The Kentuck has a length of about 90 feet on the course of the lode, and is situated between the Yellow Jacket and Crown Point mines. The extensive deposit of ore found in this mine some weeks ago is in the bottom of the vertical whim shaft, at a depth of about 270 feet. The ore found is the genuine black sulphurate and chloride of silver ore. It is of a fine quality, and no doubt will pay well. The northwesterly dip of this *bonanza*, or rich deposit, would plainly indicate that its extension will be found in the Yellow Jacket south mine, and judging from the lay of the ground the chances are in favor of an improvement further north. . . . . In the Crown Point Company's main 300-feet-level—west of engine shaft—the extension of this same ore deposit is found. The drift which cross-cuts the ore at this point shows it to be about 15 feet in width, and further explorations north and south show it to be already over 200 feet in length. The Crown Point Company are doing quite well, and I am informed that they have now over $16,000 on hand which is to go to the dividend account, and a dividend may be expected before two months are past. . . . . New strikes in the deep levels may now be expected to be made within the next three months in nearly all the leading mines here. . . . . As to other mines: The Overman Company are busy at work driving their 600 feet level west and north of engine shaft, and they have good hopes of finding ore soon. The Belcher expect to make a strike every day in their fourth and fifth levels west and north of engine shaft; but so far they have met with not the least encouraging prospects. The owners of the Confidence mine had enough of confidence left to pay a healthy little assessment of $300 per foot on their stock. The Empire and Imperial are unchanged. Both are preparing to sink and open out for deeper levels. In the Exchequer they are occasionally troubled with water, but they expect to be able to overpower this fatal agent, and proceed to prospect their mine far down in the bowels of the earth without a pump. In the Bullion mine they are drifting at a depth of 680 feet, and they expect to strike their lode east of the engine shaft. The Chollar-Potosi are doing good substantial work, and they will soon be enabled to take out more ore from their mine than ever before during its history. The 487 feet level drift is driven about 180 feet west of the new engine shaft, and it is calculated that within the next three weeks they will reach their lode. The new shaft will soon reach the vertical depth of 600 feet, when another level will be opened at once. The fine new pump and hoisting works are now completed, and can be set to work at any time. Within the next three months this company will be able to commence

business on a grand scale. . . . . In the Gould and Curry mine everything goes on satisfactory under Louis Janin, the company's superintendent. On last Christmas day, it is said, he struck it rich—richer no doubt for him than he will ever be able to strike it in the company's mine. A few days after this, he became so good-natured as to offer the Gould and Curry Company a Christmas present in the shape of $60,000, which, of course, "although unexpected," was cheerfully accepted. In the 430 feet level of the mine, west and south of Bonner shaft, the lode is improving; and further explorations will no doubt develope deposits of pay ore. There are a few mines here that will have to change their superintendents, and one its president. Not long ago I met the Superintendent of the Gould and Curry a-foot in a snow storm, far distant from the mine, attending to the business of the company. He keeps no fast horses at the expense of the company, and what is more reprehensible, he has changed the mine from a non-paying mine to a dividend paying mine, and from what we see, has the welfare of the mine at heart. This will never do. It is vulgar. Other officials will have to do the same thing. . . . . The Ophir mine continues to produce some fine ores taken from the fourth and sixth station levels. In the ninth station level there is nothing new. The south drift has now reached a point about 80 feet north of Central shaft. Operations are progressing most satisfactorily. . . . The following comparative statement as to the mines of Virginia City and Gold Hill, is from the Gold Hill *News*:

VIRGINIA MINES.

	No men employed.	No. tons ore per day.
Ophir	45	30
California	6	10
Gould and Curry	245	215
Savage	176	90
Hale and Norcross	30	40
Chollar-Potosi	160	90
Total	662	475

GOLD HILL MINES.

	No men employed.	No. tons ore per day.
Bullion	28	—
Exchequer	20	—
Alpha	50	75
Imperial	75	150
Bacon	30	75
Empire	49	65
Eclipse	27	40
Stevenson	27	20
Consolidated	38	100
Pioda	16	60
Challenge	48	50
Confidence	41	55
Burk and Hamilton	9	10
Yellow Jacket	180	175
Kentucky	11	10
Crown Point	75	75
Total	724	960

Excess of men employed in Gold Hill over Virginia 62

Excess of ore taken taken out in the Gold Hill mines over Virginia (tons) per day 485

Supposing this ore to be worth $30 per ton, the amount taken from the Gold Hill mines daily, would amount to $28,800; per month, $864,000 The amount taken from the mines of Virginia per day, would be, by the same estimate, $14,250; per month, $437,500.

Excess of Gold Hill over Virginia per day . . $14,550

Excess per month 437,500

The total amount of ore taken out in Virginia and Gold Hill, per day, is 1,435 tons; per month, 43,050 tons. Value per day, $43,050; per month, $1,291,500. In estimating the productions of our mines, we have not taken any outside of the two cities. The Belcher, Apple, Overman, and Uncle Sam are all taking out pay rock, as well as several others.

Mammoth.—A Reese River paper says: "On Tuesday last, Mr. Evans, of Mammoth District, came into the office, and showered upon our table, from a large buck-skin wallet, several silver bricks, which, though small in size, were none the less valuable, as evidences of the richness of the mines of Mammoth District. These "specimen bricks" were obtained by a rude process of reduction, the ore being worked in a quicksilver flask, then baked in a common bake oven, and also amalgamated in an oven. The following is the result of the working: From eight pounds of Silver Cloud rock, there were $3\frac{3}{4}$ ounces bullion obtained. The Silver Cloud is rich in silver, and also contains a large amount of base metal, and in order to save the silver requires skilful working. From two lots of Almaden rock, of 20 pounds each, there were obtained $2\frac{5}{8}$ and $2\frac{3}{8}$ ounces bullion. From the General Average claim, 20 pounds of rock, $3\frac{3}{8}$ ounces. This was fine-looking bullion, and we think shows a good "general average." From two lots of Vigilante ore, of 17 and 20 pounds, we have $1\frac{7}{8}$ and 2 ounces. From the Bowers, eight and a quarter pounds of rock, $1\frac{5}{8}$ ounces; Uncle Sam claim, ten pounds of ore, $1\frac{3}{8}$ ounces; seven pounds Josephine, one-half ounce; three and one-half pounds Enterprise, one-half ounce; ten pounds Sunlight, one-half ounce, about one-half of which was gold. Should the weather continue favorable, it is expected that the mill of W. T. Jones will be in operation next week, and the above workings are merely tests to see what may be expected. The miners of Mammoth District are all hard at work, taking out good ore, and the prospect seems good for the erection of a number of mills in that district the coming season."

Twin River.—The *Reveille* has been shown by Mr. Wiliards, who is interested in the Murphy mine at Twin River, an elegant specimen of rich sulphuret ore obtained from the tunnel of that mine. The tunnel has been driven to the extent of 100 feet, and at a depth of about 40 feet from the surface. The tunnel is 6 feet wide, exposing the hanging wall, and cutting through the ledge to that extent. At that depth, the vein is undoubtedly 20 feet thick on the surface. The specimen exhibited to us was taken from a stratum of solid mineral in the vein at least 3 feet thick. In the shaft, sunk near the bed of the creek, which has attained a depth of 40 feet, a body of similar ore 6 feet wide has been developed. The beautiful specimen shown to us will easily assay over $1,200 in silver . . . . The Nye *News* says of Twin River: "The mines of this famous section still hold their own, though we have not had much to say about them lately. The deep snow of the past few weeks, which has somewhat retarded travel, and the temporary blockade placed upon operations in that section have, to some extent deprived us of our usual budget of items, but now that the days are beginning to lengthen, the travel is once more setting in that direction, and we hear of many contemplated improvements shortly to be commenced over there. That the Twin River country is bound to be the best field for mining operations yet discovered in this State, will not admit of a doubt. In what other part of the State has there been found so numerous a collection of large and rich ledges? Were there no other mines there than the famous Murphy, that of itself is enough to establish the reputation of the county. But we have seen ore from many claims which rivals the Murphy. Though this claim is more developed than any other, yet another season will witness many mills in operation in this district, and see large quantities of fine ore. We published last week a communication from Twin River, in which mention was made of a number of claims that have been worked nearly all winter, and which are reported to be looking splendid, giving every indication of equalling anything in the district. Since then we have seen some fine rock from two claims, the Otho and Goldstein, situated in Ophir Canon. The Otho is about 6 feet in width, and shows the same character of ore as the Murphy, and as it lies but about 600 yards distant, it has every prospect of being as valuable as this famous mine. In a report made by Professor Clayton, he states that the ore from the Otho assays $321 per ton. That it will improve as sunk upon, is fully warranted by the rapid improvement of all claims heretofore worked to any extent. The Goldstein—which we believe is named after our worthy fellow-citizen, S. Goldstein—is a large ledge, about ten feet wide. Though it does not show rock as rich as the Otho, yet it is a well-defined ledge, and from the samples shown us, we would not object to a few hundred shares in a claim producing such ore, and take the chance of its being rich. Before parties rush off to Montana and New Granada, we would advise them to take a look at the Twin River mines.

Lander.—From the Reese River *Reveille*, we take the following: The Stella mine, situated in the Yankee Blade ravine, is located about 300 feet north of the Confidence mine. It is being opened through an incline, which has attained a depth of 40 feet, at which point a heavy volume of water has been tapped. We learn that the Superintendent, J. S. French, who went to Virginia City to purchase hoisting machinery for the mine, has succeeded in procuring perfect and complete hoisting apparatus, which he has shipped to arrive on the ground with dispatch. . . . . We understand that very rich developments have lately been made in the Manhattan Company's mines, on Lander Hill. The mineral displayed in the vein of the North Star, as well as those of the Oregon and Blue ledge, is said to surpass both in quality and quantity, any ores previously extracted. This is one of the oldest properties in the district, and did much originally to give it reputation, and although it has had extraordinary obstacles to combat, we feel justified in predicting that it will prove one of the most stable and remunerative of our mining interests. . . . . While recently engaged in doing the necessary grading for the erection of machinery and buildings upon the Washington mine, the workmen uncovered and exposed the vein for some distance. The ore was found to be a handsome chloride, in a vein fifteen inches thick. Under the direction of the Superintendent, Newmark, several tons of the ore were taken out and sent to the Ware mill for reducing. The chloride is undoubtedly very rich, and equal to the best on the famous Lander Hill, and it is estimated by Varney, of the Ware mill, that it will work $300 per ton. . . . . We were shown last evening by John Mitchell, one of the owners of the original Revenue, a curiosity recently obtained from that mine. In taking out the vein a large piece of ore of remarkable richness was thrown out, on breaking which a small bowlder rolled out of its matrix, of the size and shape of a medium walnut. The bowlder is apparently all mineral.

White Mountain.—This is the name of a new mining region that is said to be attracting considerable attention just now. Several persons left Virginia City lately, to try their luck in that new and promising district.

California.

The Nevada *Transcript*, in the course of an article on the croakings of certain persons relative to the "decay" of the State, continues: We want first of all to get clear of these complainers. Then we want more men of industry and enterprise, who are not carried off by every rumor of rich mines at a distance. We want men who are contented to make this State their home, and all such will be richly rewarded in the mines or on the farm. This class of citizens are increasing, and this is the secret of our improvement during the past two years. The sooner the restless wanderers who are carried off by every reputed discovery of rich mines are out of the country the better. Thousands of dollars are now being invested in the mines of this State, and capitalists are ever ready to build mills and work mines where labor uncovers a good ledge.

Calaveras.—The San Andreas *Register* says: Knapp, Wilcox & Co. have a fine stamp mill in operation at Yaqui Camp, about a mile and a half from town, in which they are crushing the dirt from their claim. The pay dirt is a hard cement, which will not wash by the ordinary method, but by running it through this mill it yields largely. The channel on which their claim is located runs into the creek which runs through town, and is believed by experienced miners to be very rich for nearly two miles. But it will require considerable capital to open it, and for this reason it has never been worked. . . . . The miners on Douglass Hill are carrying on their mining operations with vigor, taking out the rich deposits of gold-bearing gravel. The claims in this hill are probably the richest of any in this vicinity. . . . Several parties in town have been busily engaged during the week in examining several quartz lodes situated near town, with a view to commence work thereon as soon as arrangements can be made. The rock which they have been examining prospects very rich. . . . . A correspondent writes from Murphy's: "Our usually quiet town is all astir with excitement, and the streets are full of men, each showing the other his rock. Within the past few days a great many rich pieces of quartz have been taken from new discoveries in this vicinity. Some Chilenos have found a vein near town, out of which they are making good wages. Woods, on Indian Creek, has been taking out better rock and more of it from the Washington claim, some of which is the richest rock that has yet been exhibited, from a defined lode. About four miles above this place, near the Big Tree road, several parties are prospecting with the most flattering prospects. They have not yet found a well defined lode, but no doubt will in a short time. The quartz is very rich and in large quantities, scattered over many acres of ground. It has long been the opinion of all persons who have made quartz their study and business, that the same lode which is found, and so profitably worked, above Sonora and Columbia, passes through the very section where the rich quartz has lately been found. This same section has had two or three furious excitements of short duration. This time the prospectors are sinking to find the lode with pick and shovel, which is better than possessed all the scientific knowledge by our numerous professors. . . . . Following are the shipments for copper ore from the Union mine at Copperopolis last year: From March 7th to April 30th, 1,786,815 pounds; May, 4,034,370; June, 7,287,820; July, 6,974,485; August, 7,165,355; September, 6,752,885; October, 6,477,420; November, 3,355,370; December, 3,250,245. Total shipments for the year 1865, 47,084,765 pounds, equal to 23,542 tons 765 pounds. The freight on the above from Copperopolis to Stockton, paid at the rate of eight dollars per ton, amounts to $188,339.

El Dorado.—The Dutch Flat *Enquirer* of Feb. 17th says: The Badger Hydraulic Mining Company cleaned up one day last week the handsome sum of $3,000, the result of eighteen days, washing—four men employed. Net dividend to each one-third interest of $75. Warmington, Hoos, Gray Brothers and E. L. Bradley are the lucky parties who own the claim We believe this is the first run the company have made this season. A large tract of the same kind of ground remains to be worked, and the known perseverance and enterprise of the gentlemen owning it is a sufficient guarantee that the Badger will add largely to the shipments of dust from this district in the future. We are also informed that the Iowa Company, a few days ago, cleaned up $2,500, but as to the number of days, washing we are not advised. This is a good claim, and we are assured that the amount given above pays four shareholders a fair dividend.

Tulare.—A correspondent writes: "The mines on

Clear Creek are undoubtedly rich, and beyond cavil. Capital is fast being invested in that region, and I have only to instance, without occupying time with reference to others, that ex-Governor Bigler, of Pennsylvania was so confident of the richness of the mines on Clear Creek, that he recently purchased the quartz mill which belonged to Senator Freeman, of Tulare and Fresno, with some lodes, and he is already fast receiving returns from his judicious investment. Emigration must flow thitherward, and the great county of Tulare will soon show that it can produce something besides fat beef and hogs." . . . . The Los Angeles *News*, referring to mining operations on Clear Creek, says: There are now nine mills in operation, varying each from five to ten stamps. Mr. Bigloe lately purchased the mining interest of Dr. De Laborde, and will commence operations as soon as the machinery for a twenty-stamp mill, now on the ground, can be erected. Mr. Peper has also started a twelve-stamp mill, and judging from the prospects obtained, bids fair to yield a reasonable return to its owner. There are other mills doing as well as could be expected under the present disadvantages of a rather severe winter. The mills at Kelso and Agua Caliente have been in operation some time and are doing very well. There has been within the last week a large sale made, amounting to $75,000. Marshe & Kenady will soon be in operation; their mill is located on the creek a short distance from the town; they intend to run five stamps, and as many arastras as the water power will permit. . . . . A letter in the Visalia *Delta* from Havilah, says: Our mining interests are, just now, in a transition state. They are rapidly passing out of the hands of men who have no capital to develop them, into hands of men who have. This causes a lull of active operations, as men who have capital will not, of course, work on in the small loose way necessary to men without the *dinero*. The mills already here and erected are being worked to some extent, while others are going up as fast as circumstances will permit, and still others are on the way here or being built in San Francisco. It is a noticeable feature that the character of the mills erected here is continually improving. The first were small and very imperfect, but every additional one seems to be a large improvement on the last. We very much need a process for saving the sulphurets, and hope soon to have an effective one. As new processes are introduced we shall save more and more of our gold, one-half of which is now wasted.

Plumas.—A correspondent writes from Taylorsville, Plumas county: Business is beginning to revive here again. Some of the copper companies are resuming work on their ledges. The Mount Ararat Company have a set of hands on their ground, sinking their shaft. They appear to be determined to know what they have got; and well they may be, for they undoubtedly have the best ledge in the State. It is far superior to the Union ledge at Copperopolis, both in richness of ore and ease of working. It is easily reduced in a common blacksmith forge, and freely yields sixty-five per cent. pure copper by working process, and by acid essays, made by Dr. H. T. Lee, it yields from sixty-nine to seventy-five per cent. The new smelting works at Genesee are now in full blast, turning out beautiful bars of pure copper, with only one process. The works are built and run by an experienced man from Europe, and are a complete success, and give new life to the copper interests up here.

Esmeralda.—A correspondent of the Sacramento *Union* writes from Aurora, Feb. 18th: "For the past month we have had pleasant and good working weather. The snow is all gone except on the north side of the hills, and the miners have made good advantage of the time in working the mines with satisfactory results. Yesterday a case was argued in the District Court for an injunction and partition, or segregation of a claim in the Falkirk Ledge, it being a spur of the Crocket, which injunction, it is understood, the Court will not grant. The decision is to be rendered to-morrow. The mining prospects of this county are generally very favorable. The Crescent Company, at Bodie, have struck their ledge, and feel greatly encouraged. The Empire Company, in the same district, are about building another new mill of thirty stamps, as they say they have rock enough for one hundred stamps to work. One of their ledges is opened five hundred feet, and they have the ledge the whole distance, and the richest part is at the further end. Large, heavy freight teams are passing through here almost weekly, loaded with machinery for Silver Peak, Hot Springs, Columbus, and the adjoining camps. We have confidence of very large expenditures in mills, machinery, and working the mines in this county and vicinduring the coming season."

Siskiyou.—Rich quartz diggings are mentioned by the Yreka *Journal*, as having lately been discovered in McConnaughy's Gulch, Scott Valley. They are said to prospect very good, the color being found in the rock for over two miles and a half. . . . . There is a large quarry of superior colored marble on the South Fork of Scott river, which is susceptible of a very high polish, and a better quality for grave-stones, monuments, mantelpieces, etc., than any that comes to this market from below. It is of a dark gray variegated color, and its extent is beyond visible calculation. Solid blocks of any size for building or ornamental purposes can be easily obtained. . . . . The Yreka *Union* says: "The late storm has put a temporary stop to mining operations throughout the county. At Cottonwood the deep claims are filled with water, and they are the same on Hungary creek. At Deadwood, Indian and McAdams creeks, the shafts are filled with water—the drains not being sufficiently large to carry it off. The miners will not be able to accomplish much until permanent weather returns. From Humbug we have the only encouraging news; most of the miners are busy at work and are doing well. We learn that some new mines have been struck a few miles below Oro Fino, which pay large dividends."

Nevada.—W. H. N. Cronise & Co., says the Grass Valley *Union*, of Feb. 16th, yesterday purchased the well-known Cambridge mine for the sum of $20,000 cash. This mine adjoins the celebrated Lucky mine, is a valuable piece of ground, and in the hands of Cronise & Co., cannot fail to very shortly turn out an excellent investment. We hear of pending negotiations for another valuable mine in our immediate vicinity which will probably be closed in a day or two. . . . . The *Transcript* of the 21st says: Yesterday we saw some specimens of quartz from the Sherman ledge, which is located about three miles from Rough and Ready. The rock contains a large amount of free gold and rich sulphurets. The ledge is twenty inches wide, and has been prospected to the depth of twenty feet below the surface. . . . We learn that work has been resumed upon the Mattingly ledge. Some years ago considerable prospecting was done upon this ledge and several crushings were taken out. Part of the rock was worked at Grass Valley and Nevada, but did not pay. The owners are still confident of the richness of their claims, and are determined to prospect it to a greater depth. . . . . One hundred tons of rock from the Mohawk Ledge was crushed at Palmer's mill, Nevada county, and a "clean up" was had on Saturday last. The result is in the neighborhood of $10,000. . . . . At Rocky Bar, a short distance above Washington, a number of companies are engaged in mining out an old channel of the Yuba river. This channel is some distance below the present bed of the stream, and is buried to a considerable depth under ground. It is worked by means of tunnels, drifts, and cuts. The gold taken from these mines is coarse, and is found all through the blue gravel of the bed, but the richest deposits are found in the crevices of quartz. Many lumps are found that weigh as high as $20, and the miners frequently get from $300 to $600 to the pan. The channel through which the river now runs is also rich, and by sinking to the bed rock, gravel which pays from $6 to $20 to the pan can be obtained. . . The old Wigham mine, which has not been worked for more than two years, is again turning out excellent rock. About two months ago the pumps were set in motion by the San Francisco Company. The mine has been freed of water, the drifts and tunnels cleaned, and the company now have seventy tons of excellent rock upon the surface. Stiles' mill commenced crushing this rock on last Monday, and will be kept constantly at work. The company have the mine so arranged that they can take out rock at the rate of twenty tons per day. This ledge is one of the best in the vicinity of Gold Flat. . . . . The G. V. *Union* of Feb. 20th says: We learn this morning that the owners of the Globe Ranch Mine, on Wolf creek, have struck very rich quartz. Samples of it have been seen in town and it will pay a hundred dollars or more to the ton. The company have been working for three years, making wages as they went along, and now they are rewarded a hundred fold. . . . . A lot of one hundred and ten tons of rock from the Tolbert ledge, crushed at the Oriental Mill, was cleaned up on Saturday, and yielded between eleven and twelve hundred ounces of amalgam. We do not know how much the amalgam retorted, but even at four or five dollars an ounce, the yield is large. The ledge is being worked steadily, and we understand the owners propose erecting steam hoisting and pumping works immediately. . . . . A correspondent of the Virginia *Union* writes from Summit City: A short time ago, a very fine ledge was discovered on the southeast side of Old Man Mountain, and known as the Yuba Ledge, Daily Co. It was located by the same individual who discovered the famous Mohawk, which it resembles so closely that only experts can tell the difference between them. It is what miners call an "A" ledge, narrow on the top and widening as it goes down. Its present width is four and a half feet. It is a beautiful vein of quartz, showing free gold, and situated admirably for the running of a tunnel. . . . . Winton's Mill is in full blast, working Pacific rock, but the California has not resumed business since it ceased running a short time ago. The great difficulty of obtaining sufficient quartz, at this season of the year, to keep the mills running with anything like regularity, has caused the temporary suspension of operations. As in every new undertaking, many difficulties have arisen, for which no sufficient provision has been made. The mills were not completed until the winter had set in. The proprietors commenced the crushing of rock, for the purpose of testing the quartz by mill process, under their personal supervision; the result exceeded their most sanguine expectations, and early in the spring the shrill whistle of that motive power, whose muscles never tire, will again be heard in the mountains and valleys, and before the expiration of 1866, not these two only, but I predict, although no prophet, a score of mills will sound "glad tidings of great joy" to many a poor toiling miner, who now believes he has at last met the tide that leads to fortune. . . . In regard to new mills to be constructed, none but those with the most complete contrivances for the reduction of gold, silver and copper ores, should be erected. The presence, in large quantities, of the base metals and semi-metals, quicksilver, galena, antimony and arsenic, and the sulphurets of iron and copper must cause a large loss of the virgin metals. Some mineralogists estimate this loss at the incredible amount of eighty per cent. It is well-known that some of our mines have yielded $71 per ton. If the estimate of eighty per cent. is correct, the value of the tailings from these mines would be sufficient in a few years to cancel the immense debt of this nation, which Secretary McCulloch tells is nearly three thousand millions of dollars. . . . . The *Transcript* says: We recorded, a week or two ago, the finding of a quartz specimen by a man named Spayth, some ten or twelve miles above Nevada, which yielded $640 in gold. The specimen was found in a ravine, just below a mammoth quartz ledge, from which it is supposed to have come. We have since learned some further particulars in regard to the ledge. It crosses Deer creek at the Cascade falls, about twelve miles above Nevada, and which is supposed to extend a hundred miles or more in nearly a north and south direction. It extends from Plumas through Sierra, Nevada, Placer and El Dorado counties, cropping out in places, but is generally barren. At Steep Hollow, it is 30 or 40 feet in width, and for some distance crops out to a height of 15 or 20 feet above the surrounding rock. We have frequently seen notices of this ledge in our exchanges, and we believe it is being worked successfully in some places in Plumas county. Locations were made on the ledge in this county as long ago as 1852, but the prospects not being favorable, the locations were abandoned. A number of locations have recently been made near where Spayth found the specimen, and we understand one company purpose running a tunnel to strike the ledge at a considerable depth. There is reason to believe that the ledge contains rich pockets, which, if found, would amply reward prospectors.

Humboldt.—The *Journal*, February 18, says: "We learn from an authentic source that coal has been discovered within three miles of the town of Arcata. The discovery was made by an old English coal miner, and he says there is abundance of it, and only needs digging out of the ground. The specimens exhibited are of a better and firmer quality of coal than any ever heretofore found on the Pacific coast. Considerable excitement prevails among the Arcatians concerning this newly discovered source of wealth." . . . . The *Times* says of this discovery: Not long since, rumor reported that a vein of coal, four feet in width at the surface, had been opened on land belonging to the Messrs. Preston, situated not more than two miles from Arcata. About a month or so ago, a forty-acre tract adjoining Preston's land was purchased at the Land Office, at the government price of $1.25 an acre, for which we hear the purchaser has been offered four hundred dollars in gold, and it is generally understood that the indications of the existence of coal upon it justify the advanced price offered for it.

Montana.

An old Californian writes from Helena to a San Francisco merchant, some information that is important to those thinking of going to Montana. He takes Helena as a starting point, and gives the distances of the various points in all directions, thus:

SOUTHWARD.—To Virginia (Montana), 130 miles; to Bannock City, 130 miles; to Bear River, (junction of Idaho and Montana routes,) 475 miles; to Salt Lake, 560 miles; to Los Angeles, 1,360 miles.

SOUTHWEST.—To Virginia City (Nevada), 1,110 miles; to Placerville, 1,210 miles; to Sacramento, 1,260 miles; to San Francisco, 1,344.

SOUTHWEST.—(*via* Salt Lake.)—To Denver, 1,250 miles; to St. Louis, 2,150 miles; to New York, 3,150 miles.

NORTHWARD.—To Fort Benton, 130 miles.

EASTWARD.—To Missouri River, 14 miles; to Confederate Gulch, 35 miles; to White's Gulch, 35 miles; to Oregon Gulch, 35 miles; to Avalanche Gulch, 35 miles; to Fort Union, 600 miles; Mussel-Shell, a point on the Missouri river which they are in hopes to reach with boats for six months in the year 212 miles.

EASTWARD.—To Cotton Wood (in Our Lodge Valley), about 60 miles; to Hell-gate, about 148 miles; to French Town, about 156 miles; to Mission, about 292 miles; to Walla Walla, about 500 miles; to Wallula about 520 miles.

NORTHWESTWARD.—To Blackfoot City, 30 miles;

to Washington Gulch, 42 miles; to Jefferson Gulch, 45 miles; to McClellan's Gulch; 53 miles, to Elk Creek Gulch, 60 miles.

To St. Louis, he continues, by way of Fort Benton and the Missouri river, is about 3,450 miles. To Boise City, by the route taken by some trains, which came in this fall, the distance is about the same as to Walla Walla. The distances given show conclusively the only practicable route for the trade and travel of California, Oregon, and Washington, is *via* Columbia river. The sooner all matters connected with routes are settled the better. The point on the Columbia river from which stages are to start should be determined upon, and arrangements made for putting on a line of stages, with convenient stations along the line. The completion of the steamboat on Pen d'Oreille Lake should be pushed forward as fast as possible. In short, all should be done that can be to show the public that they can go to the Blackfoot country *via* Columbia River and Pen d'Oreille Lake quicker and cheaper than by any other route. From the first Falls on Clark's Fork this side of Pen d'Oreille Lake, to Helena, I could make arrangements to-day to have a line of coaches put on as far as the Agency or Horse Plains, and a saddle train from there to the Falls It is one of the best natural routes in the world. Horses could work on grass all the season without any difficulty. It has been done betw n here and Virginia City, and between here and Blackfoot City. There are houses along the whole route, or will be by the early spring. I have induced one or two parties to take up farms along the route, who wished to do so, if a line was to be established. Of the success of the route *via* Pen d'Oreille Lake I have no doubt, and all I have heard since writing you in regard to the matter goes to substantiate what I then wrote. A pack train of ninety animals came in to-day, which loaded up in the fall for me, and they speak most favorably of the practicability of the route *via* the Pen d'Oreille Lake. They make the distance from the head of navigation on Clark's Fork (say the Cabinet) to the wagon road, sixty miles at furthest. . . . . I will tell you all I know of the resources of this country The gold crop of Montana thus far has been from placer diggings. Quartz mining is in its infancy. Up to the present season the mining has been confined to some three gulches—one in the vicinity of Bannock (Grass Hopper), with Alder & Bivens, in the immediate vicinity of Virginia City. Within the last twelve months gulches without number have been discovered. Among them (*all* paying) are French, German, Last Chance, Grizzley, Oro Fine, Dry, Nelson's Deadwood, Ophir, Carpenter's, Washington, Jefferson, McClellan's Confederate, Oregon, White's and Avalanche, gulches. Of the amount of gold taken from these camps it is impossible to form anything like a correct estimate. They cover an area of some one hundred and fifty miles long and some sixty wide. Some of the best camps recently discovered are within four hundred miles of Walla-Walla. Close on the heels of placer discoveries have come those of quartz, until there are lodes at all points of the compass. . . . . The first mill in this immediate vicinity was put in operation last week, some six miles from here. The result of the week's work was $1,400. The mill has ten (10) stamps. A number of mills have arrived this fall, and will be put up this winter. Enough is known to satisfy me that this is one of the most extensive mining districts yet discovered, and will hold its own with any country in point of richness. I am satisfied that few people in California or Oregon fully appreciate the value of this section. I am of the opinion (and not alone) that the country east of the Bitter Root Mountains is of as much value to Oregon, as the belt between the Cascade and Bitter Root Mountains. You may think "I put it rather strong," but time will tell the story. I have tried to look on all sides, and can come to no other conclusion. . . . . The bulk of goods purchased have arrived, but many have to lay over on the Missouri River at points where the boats were obliged to discharge their cargoes. Of all the boats that started up the Missouri River last season, only seven succeeded in reaching Fort Benton. Most of the purchases for this market were made in St. Louis during the months of March and April last, at which time goods were high and gold low, and the figures look large. Coffee, 35 cents; crushed sugar, 28 cents; a blanket similar to the Salem, $18 per pair, and other goods in proportion. . . . . The Salt Lake *Telegraph* of February 9th, has late news from Montano. "The Montanans," it says, "are evidently on the eve of another big Indian fuss. We have before stated that around Fort Benton the savages were reputedly on the steal and shoot path, if they were not on the plain war path. H. D. Upham, the Deputy and Acting Indian Agent for the Blackfeet, had represented to Governor Meagher that the Piegans and Bloods had been committing serious depredations on property, and perpetrating many murders, both in respect to whites and other tribes of Indians. Major Upham mentions the supposed murder of a company kbown as Huniche and Legree's, by the Piegans. These hostile Piegans were camped on the Marias river, 90 miles from Benton, and were estimated at 300 young warriors under Little Dog's son, who, Agent Upham says, 'have got to be killed before a man's life is worth a cent there.' The Crows and Gros Ventres say they are willing to assist the whites in cleaning out the Piegans. The citizens at Benton had organized for self-defence, and petitioned Governor Meagher to send 500 men to punish the red skins and protect the whites. Accordingly the Governor is out with a proclamation, calling for at least 500 mounted volunteers to march against the marauders and murderers, and demand and put to death the guilty parties. As there is no appropriation to meet the expenses of the expedition, and no Legislature sitting to vote supplies, the merchants of Virginia and Helena are invited to advance such stores as may be necessary, to be receipted for by the Quarter-master and Commissary of Subsistence. The volunteers are requested to equip themselves with horses, arms, ammunition, blankets, &c., and report at headquarters at Helena. The Governor furnishes 30 Springfield muskets, 3,000 rounds of ball cartridge, bayonets cartridge boxes, and some other accoutrements. So we may be expecting some lively news when the expedition gets fully under way and fairly at work." . . . . "The following," says the *Alta*, "is the list of charges and distances from this city to Montana and Idaho, *via* Salt Lake, prepared with care by a gentleman well posted on the matter:

From San Francisco to Salt Lake City *via* Sacramento river, Placerville, Virginia City, and Austin by the Pioneer Stage Line; fare, $125.

Salt Lake City to Virginia City, Montana, Holladay's Line, tri-weekly; distance, 450 miles; fare, $125 (legal tenders).

Virginia City, Montana, to Helena (Last Chance); Oliver Company Line, daily; distance, 110 miles; $15 to $20 (dust).

Helena to Blackfoot City; Oliver Company Line, daily; distance, 45 miles; fare, $10 (dust).

Virginia City, Montana, to Fort Benton, on the Missouri river; distance, 260 miles; no public conveyance beyond Blackfoot.

Salt Lake City to Boise City; Holladay's Line, tri-weekly; distance, 450 miles; fare, $125 (legal tenders).

Helena to Diamond City, Montana; distance, 35 miles; fare, $7 50 (dust)"

. . . . According to the Nevada *Transcript* of Feb. 16th, "a gentleman who recently arrived from Montana, does not give so highly-colored an account of the country as we are in the habit of hearing upon the streets daily. He says that the mines are not so good as those of Nevada county. They can be worked but few months in the year, on account of the severity of the climate, and many poor fellows have there limbs frozen in the winter. Every necessary of life commands famine prices."

From Nevada City, Montana, a correspondent of the Sacramento *Union* wites:—"This gulch (Alder) the first discovered in the Territory, except one—is some sixteen miles in length, and has been very rich, but is nearly worked out. Many have made fortunes here, but it has cost at least seventy-five cents for every dollar obtained, owing to the depth of stripping being from eight to fifteen feet, and much of the diggings on the low bars and toward the head of the gulch are still deeper, being from twenty to fifty feet, and have to be drifted and timbered, which is quite expensive. Taking all things into consideration, such a gulch in California, at any time prior to 1856, would have created no unusual excitement; and I will hazard the assertion that nine out of every ten gulches of corresponding length, in California, have paid more per diem for all the labor expended than this has ever done, or ever will do. There have been many new gulches discovered in the past year, among which may be mentioned the Last Chance, Blackfoot, Confederate, McClellan, and Montana, as the richest. There are a score or more of less note and but little developed, and every week brings news of new discoveries." . . . There are two great drawbacks to successful mining in this Territory. First is the long, cold winters, in which all mining operations are suspended, except prospecting; and, in the second place, the enormous prices of living. Merchants here are like the negro, who said, if he bought anything for one dollar and sold it for two, he was sure he made one per cent., and was satisfied. But the negro's one per cent. does not satisfy the Shylocks of Montana, but two and three hundred per cent. is often charged for any article that happens to be scarce in the market. A few items I will note, that are on the rampage just now: Tobacco comes first (I am out), and sells at from $3 to $8 per pound; tea, from $3 50 to $5; coffee, $1 25; salt, 75 cents; matches, 50 cents per box; axe and pick handles, $3 each; California whisky and brandy, from $8 to $15 per gallon. . . . The agricultural resources of Montana will, when fully developed and put in successful cultivation, be quite adequate to supply the wants of the population. . . . Quartz on the drain are quite prevalent at this time, and the gold and siver lodes are said by the knowing ones to rival, if not excel, those of California, and some predict as rich results from some of the silver lodes as anything yet obtained in Nevada. Some few mines are in operation and paying well. Many more will be built next summer. I would say to those contemplating coming here, to "look before you leap." If you have a comfortable home and are making a living, stay where you are; for any of the comforts of life such as you have in California cannot be had for any price in this no-God country. However, we would welcome any Californian, who possesses bowels of compassion, that might drop in among us with a few teams loaded with tobacco, salt, tea, coffee, sugar, whisky and pick-handles.

Colorado.

A correspondent of the *Tribune*, who has recently travelled through the Territory says: "Colorado is a good illustration of the early uncertainties of mining. Its gold-bearing quartz opened very richly, and during the first wild excitement fully $20,000,000 of Eastern capital were invested. One company sold $600,000 worth of stock at par, for cash, over the counter of its New York office in a single day, and at the close of business hours was compelled to call in the police to clear the room of eager and impatient purchasers. As the quack advertisements say, "children cried for it" Thus quartz mills with an aggregate of 2,000 stamps were sent to Colorado, and mines opened. But at a certain depth the character of the veins changed. The gold was there, but associated with pyrites of iron, and could not be separated by any known process. From that day Colorado mining has been practically suspended. Of course, American ingenuity will prove equal to the emergency. After infinite experimenting, several processes for saving the gold are nearly demonstrated successes, and mining stocks which had "touched bottom" are once more appreciating in value. In Peru, silver mines are worked at the depth of 1,700 feet, and one California gold mine is opened 1,000 feet with no exhaustion of the ore. . . . . From the Denver and Black Hawk papers we learn the following: D. D. Belden reported, on January 31st, his operations for the same month, in the Smith & Parmelee mine, 427 ounces of gold—valuation $7046; treasury note value, $9722—on which he says there was a handsome profit, although it was by far the poorest month's operation since he had charge of the business—now six months. The mine is now improving, and he thinks the present month will show better results. . . . When the consolidated Gregory was organized upon 500 feet of the Gregory lode, now nearly two years ago, it seemed disposed to adopt the suggestions of Mr. James E. Lyon as to its future operations. It was Mr. Lyon's idea, even before the sale and consolidation were effected, that a different system of mining must obtain here or the business be abandoned. Three or four years' experience in mining had convinced him that such was the case. At that time, the idea of any essential improvements in milling was not generally entertained, and indeed most of the Colorado mill-men believed that nothing would ever supersede the stamp-mill in the manufacture of the ores. Hence the huge stamp-mills which were purchased by several if not all of the newly formed companies, under the impression that in working on a far larger scale, labor might be economized and profits correspondingly increased. The consolidated Gregory bought a 100 stamp-mill, which came West as far as the Missouri River. Meanwhile Mr. Lyon had been experimenting with smelting, and becoming convinced that it was the treatment and the only one then known for the Colorado ores, while he proposed to test that treatment on a large scale in Colorado on his own responsibility, the company appeared to think it best to let its mill lie still and await developments. We trust that by the time the mine is properly opened, Mr. Lyon's smelting-works will be in full and successful blast, and that they will have proven even a greater step forward in the business of treating the sulphurets and pyrites than the institution of system and economy in mining is in the business of producing or raising the ores to the surface. . . . . The new Briggs mill has started a portion of its fifty stamps. The mill is built of wood and brick combined, its foundations and those of the batteries are solid, and it is 50 by 87 feet in dimensions, with a lean-to on the back side, the whole length, and 30 feet wide. In one end of the main building are the boilers and engine, in the other a double set of batteries, twenty-five 800 pound stamps in each, facing together, and perhaps 12 feet apart. The tables are stationary, five feet in length, plated with copper sheets one-fourth of an inch thick, have 4 or 5 wooden riffles at their lower ends, and discharge into a trough, also copper plated and so inclined as to carry off all the stuff coming from the batteries. There is one shaft in front of the boilers, handy to one set of batteries; another just outside the mill in rear of the boilers, handy to the other set of batteries. This mill will have cost, complete, about $150,000, and that in full operation, the company's pay-roll will require $2,000 a week. The management confidently calculates, however, from what has been done before, upon taking out a full thousand dollars a day. At this rate, the mill will have been paid for six or seven months hence. Which is all very favorable indeed. . . . . A few weeks since, we went to see the Colfax lode: the shaft was then about 70 feet deep, and very fine argentiferous galena was coming in fast. We hear that the owners have been steadily sinking since, with more and more encouragement; also that

Mr. Henry has formed a company with a nominal capital of $200,000, one-fourth paid in, among the members of the Massachusetts Legislature, to develop the lode. The consideration to the owners was $100,000 worth, or one-half the capital stock.

Arizona.

Alluding to the San Francisco District, the Mojave City correspondent of the *Alta* writes:—Enterprising, hard working miners have at length shaken off the fetters rivetted on by the few early pioneers three years ago, and are pushing forward tunnels and shafts to develope unprospected lodes. Some of the old hangers-on, or drones, are boasting that these enterprising men are but working for them—that they are jumpers, and that the courts of California and Nevada always decide against jumpers—that, as soon as rich ores are developed, they will resume full possession; but we guess "not much." But as to what has and is being done: Mr. Hardy has been working for the past six months from fifteen to twenty-five men on the "Parsons" and "Michigan" lodes. A tunnel is being run upon the "Parsons" that will strike the vein at a depth of 500 feet below its croppings; it is now in 325 feet. A shaft is also being sunk that will strike the vein at a level one hundred feet lower than the tunnel. The "Michigan" lode runs across and at right angles with the "Parsons," upon which a tunnel is now in three hundred feet; it is designed connecting it with the Parsons tunnel, thus giving both mines complete ventilation. Both tunnels have already proved a considerable water in the hill in which they are run. Mr. Hardy's claims on the Parson's lodes, are known as the Southern Cross Gold and Silver Mining Company's claims, west, a half-mile, upon the same lode as the Queen of the Pacific Company's claims, upon which a tunnel is being driven—now in one hundred feet. West of and adjoining these claims are the Invincible Gold and Silver Mining Company's claims, upon which a shaft is being sunk. A tunnel, if being run upon the Leland lode, will prospect the vein six hundred and sixty feet below its croppings. Every one interested in the prosperity of the San Francisco District will rejoice to hear that the noted Moss lode has at length got into hands that will turn some of its immense wealth to account. The mine has been purchased by a heavy New York company, and no less a personage than Mr. Charles L. Strong, under whose excellent management the Gould and Curry gained its world-wide celebrity, is here, taking the initiatory steps towards opening and working the mine. He has about sixteen men at work grading roads to the mine, and preparing foundations for buildings. It is confidently expected that within a year ours will be as lively a mining camp as any on the continent . . . . There are many seemingly reliable reports continually coming to hand about rich placers away in the White Mountains, which are situated in the heart of the Apache country. It is the old story of gold bullets revived. So far as I have heard, all parties who profess to know anything about it, concur in the richness and locality of the mines. It is not known how extensive they may be, but there can be but little doubt that somewhere northeast of Prescott, in the neighborhood of 150 miles, there exists rich placer gold mines. If such is really the fact, the best force that can be brought against the Apaches is an army of miners, who would not be slow to occupy the country once it was clearly demonstrated. . . . . A telegram from San Francisco, March 25th, states that Arizonia papers up to the 16th report mining operations as being very prosperous. . . . . The *Alta* says: "We have received from Mr. Thomas King specimens of rock salt from a mountain of the article located near the mouth of the Rio Virgin, Arizona, about thirty-four miles from Callville, on the Colorado River. This salt is as clear as the purest rock crystal, and if it were not for its being so readily soluble, might be cut and ground into spectacle glasses like Brazilian pebbles. The supply of the article is said to be perfectly inexhaustible. Salt was recently shipped from this city, for the use of the smelting works about to be erected at Williams' Fork, on the Colorado, at an expense for freight of $70 per ton. Should the copper, silver and gold mines of Arizona, turn out as extensive and rich as they now appear, the discovery of such quantities of salt, near the banks of the Colorado, will prove an important item in their development.

Pennsylvania.

The Onondaga Salt Company, of Syracuse, N. Y., have sold their interest in coal mines in Pennsylvania to the Morris Run Coal Company, for $739,800 57. Of this sum $510,000 was bonus. The Salt Company, at the same time, secure a contract for all the coal they want for manufacturing purposes, for the term of seventeen years, at fifty cents a ton above actual cost. . . . . From the annual report of the Board of Directors of the Pennsylvania Railroad Company, we learn that during the last year, 1,074,757 tons of coal were carried as freight—a decrease of 12,622 tons from the previous year. . . . . One of the party of British capitalists that made the tour of this country last summer, writes in the London *Railway News*: The coal of the Mahoning Valley and the surrounding region is, as far as known, of a different character to that of any other portion of the Alleghany coalfields, or, in fact, of any other bituminous coal, in its freedom from sulphur, and its applicability, in the raw state, to the manufacture of iron. In other places the coal has to be coked before it can be used in the blast-furnace. The coal of the Mahoning Valley region requires no such preparation, but is used directly from the pit in the manufacture of the best quality of pig-iron. This bed extends eastward into Pennsylvania, keeping a few miles south of the main line of the Atlantic and Great Western Railway, and terminating a few miles west of the Franklin branch. In fact, it occupies nearly the whole space bounded by the main line and the Franklin and Mahoning branches, being easily accessible by lines pushed out by either of these, but only actually penetrated by the Mahoning branch, which taps it at one of its best points. The whole area of this bed of coal is about one thousand miles. The dip in the Mahoning Valley is S. 12 deg. E. 20 feet in a mile. The only developed portion of this valuable field is that in the vicinity of Youngstown, in Ohio, and at Sharon and New-Castle, just across the Pennsylvania border. Recently, valuable seams have been found in the eastern portion of the deposit, at Sandy Lake, which is a few miles west of Franklin, and easily accessible by a branch from that place, or from the main line of the Atlantic and Great Western, should it be desirable to construct one. This bed of coal from the Mahoning Valley to Sandy Lake, is destined to be the home of iron manufacture. From Cleveland, the rich iron ores of Lake Superior are brought down by railroad and canal to the side of the pits, where there are inexhaustible supplies of stone-coal ready for immediate use in the furnace. The hills are full of iron ores and limestone for fluxes, and as soon as the iron is manufactured, the railroads and canals are ready to take it to market, or to the manufactories, where the pig-iron is worked up into useful shape. As yet the business is in its infancy, but the progress of iron manufactures in the Mahoning Valley has been rapid and great. In 1846 there was but one blast-furnace in the Mahoning Valley, now there are in the valley proper, fourteen in successful operation, and about a dozen more in the neighboring county. In 1853 the total amount of iron ore taken into the Mahoning Valley was 3,000 tons, obtained entirely from Northern New York. In 1864 the importation to the same region, by the Mahoning branch alone, was 90,775 tons, in addition to which a considerable amount was taken by canal, nearly the whole being the rich ores of Lake Superior. Additions to the iron-making establishments of the valley are continually in progress. In 1849 the coal raised in the Mahoning Valley and shipped to Cleveland, amounted to 26,851 tons. In 1854, the Mahoning Railroad, then only partly opened, and the canal, transported to Cleveland 100,000 tons of coal. In 1864, the engineer of the then unfinished road reported to the directors an estimate of the probable business of the line when completed to Youngstown, its present terminus. He expressed his belief that there would come upon it a transportion business of 200 tons of coal daily—the present business is over 500 tons per diem. In addition, he stated that he expected a return freight of 100 tons of miscellaneous merchandise, including iron. The return from Cleveland, of iron ore alone, is 300 tons a day. The amount of business is now limited only by the capacity of the road. With increased facilities, soon to be provided, the transportation of minerals over the road will be enormously increased.

Idaho.

A correspondent of the Placerville *Mirror* writes from Silver City: The Owyhee silver mines, so seldom mentioned by the press of California and always depreciated by the press of Nevada, are now acknowledged by all visiting this section to be the richest ever known. We have many ledges that cannot be excelled in richness, in both gold and silver. Also, cinnabar, tin and diamonds abound. As for the latter, I cannot vouch, but the other valuables certainly do exist in this locality. Not being a very brilliant community, we are as yet undecided on the diamond question. Something resembling diamonds has been found in abundance, and many have been sent for the inspection of experienced ones below. If they prove valuable, the diamond will depreciate, for we can stock the diamond market of the whole world. Of all the silver ledges ever seen by man, the Poorman, no doubt, is the richest. It is useless to attempt to describe its value, as I think its richness is beyond the power of calculation. Four weeks working in this mine yielded the handsome sum of half a million dollars, when litigation began, stopping the stupendous daily yield of this mammoth deposit of silver and gold. This ledge is our boast, and we challenge the mining world to compete with it. Layer after layer of great sheets of silver are found in it, resembling more a massive jelly cake; as jelly is to the bread, so silver is to this rock. Silver predominating over quartz, makes this essentially a silver ledge. Many stories have been published in connection with this ledge, but nothing yet has exaggerated its value. Should it keep up its lick for a year, we venture to say that we can build our side of the Pacific Railroad. The Chico and Humboldt routes are the natural highways by which Owyhee must have communication with California, being half the distance and one half less expensive than the roundabout road *via* Portland. California should be up and doing in this matter. She naturally is our market, and on her we will depend for our future wants. Webfoot has failed to furnish us with the necessaries of life so far, causing famine to stare us in the face for two winters, and we expect nothing better until we have communication with you overland. We have the "bricks" to exchange with you for your produce. . . . . "A. D. R." writes to the *Tribune*: Practical men believe that the Flint District ores can be taken out and reduced for $20 per ton. If so, it is even richer than Owyhee. It has some good water power—a most important consideration, for a 20-stamp steam-mill consumes daily 10 or 12 cords of wood, costing $6 to $10 per cord. With water-power, a small steam engine (five or six horse-power for a 20-stamp mill) is required for amalgamating. Fifteen-stamp mills are more economical than 10, and 30 than 20, only the same number of men being required to run them. Once more I urge capitalists designing to purchase, to look at the quartz regions in person, or send out a trust-worthy agent. One week in the mines will give more exact and valuable information, than a year's study in a New York office or library. The lateness of the season prevented me from visiting Idaho City, with its 3,000 people, the largest town in the Territory, and metropolis of all the placer and several of the quartz regions.

Oregon.

"The mineral resources of Oregon," writes a Portland correspondent, "are very great. The gold and silver quartz lodes already yield richly. Iron is found in abundance within fifteen miles of this city. Some of it has assayed 60 per cent pure metal. Wood is plentiful, and the ore ought to be reduced here. The Pacific Coast uses 70 tons of iron daily, but imports it all from the Atlantic coast, except the supply for Vancouver Island, which comes from Scotland. I hear much, also, of the Sontiam gold mines, a few miles from Salem, capital of the State. They seem to equal even the rich deposits of Idaho. . . . The Dalles *Mountaineer* gives the following table of the estimated annual product of gold and silver on the Columbia and its tributaries:

John Day Mines	$1,500,000
Warren's	750,000
Elk City	25,000
Florence	200,000
Clearwater	200,000
Oro Fino	600,000
Bars of Sal, Snake & Clearwater	400,000
Clark's Creek and M Basin	150,000
Colville, Pen d'Oreille and Kootenai	1,000,000
Montana Trade	1,000,000
Auburn	500,000
Total	$6,450,000

Indiana.

An excitement about coal has arisen in Spencer county, Indiana. Back of Grand View the hills are reported full of coal, superior in quality to any west of Pittsburg. The Lafayette *Journal* says: A company has been formed in Cincinnati, with a capital of $300,000, which proposes to develop these mines to their fullest extent, as soon as the machinery can be purchased and put in operation. The vien of coal the company proposes working is about five feet thick, and the coal of an excellent quality. The company also contemplates the immediate construction of a railroad from Grand View to the mines, for the purpose of delivering coal, in any quantity that may be desired, on the river bank.

Massachusetts.

A vein of gold-bearing quartz has been discovered in Western Massachusetts, which promises to be remunerative under judicious working. Recent operations, on what is known as Diamond Hill Lode, disclosed in one sample the presence of gold at the rate of 2 ounces, 4 pennyweights, 6¼ grains, to the tun of gross material; or $49.64 per tun; in another sample, $41.14 per tun, and in the third sample (the material being decomposed surface ore,) $35.12 per tun.

Minnesota.

The Vermillion Falls Gold Company, with a capital of $300,000, has been organized at St. Paul, to "mine, crush and smelt gold and other precious metals in St. Louis County." They have eighty acres of land located upon a point extending eastwardly from the southern shore of Lake Vermillion, in St. Louis County, Minnesota.

Kansas.

The State Geologist of Kansas places in a very strong light the mineral importance of that State. He asserts that salt-springs exist in nearly every county. Salt, in a pure, solidified form, in a stratum two feet in thickness, is found in Republic County.

The coal-measures are extensive, the Osage and Cherokee veins being especially rich. Beds of gypsum have been discovered. Iron ore and tin are also found.

British Columbia.

The Victoria papers are full of the wonders of the Big Bend mines, and they appeal to the miners of California to come and get rich. . . . A correspondent writes from the new diggings thus: Cariboo, which has heretofore been the great centre of attraction as a gold field in British Columbia, has been entirely eclipsed by the discovery of rich surface diggings contiguous to the Columbia river in the southeast portion of the Colony, about one degree north of the forty-ninth parallel of latitude. Although William's Creek has been, for its extent, the richest gold field in the world, it has never been popular with the miners, simply because the diggings were deep, the prospecting expensive, and the lead uncertain and difficult to find. There was no such thing known in Cariboo as the "Poor Man's Diggings," although many a poor man has been made rich by a fortunate turn of luck in that region. The gold, however, was taken out by the *few*, while the *many* were obliged to either work for wages or go away disappointed. For two or three years past great exertions have been made to discover surface diggings in the country, but, until late last fall, without effect. The Government fitted out a large party of prospectors in the spring of 1865, but after a season's labor in the mountains, they returned without being successful. What the Government failed to accomplish, the individual efforts of old California pioneers succeeded in bringing to light. Surface diggings on six creeks were found, that, so far as they have been tested, have not been surpassed in richness by any mines on the Pacific coast. The new diggings are within a week's journey of the Victoria, and not more than half the distance to Cariboo; besides, there is water carriage nearly all the way. Prospecting last fall was done under great disadvantages. The men had nothing but "flour straight" to live on, and even mining tools were not to be had for "love or money." The wonder is, how so much work was carried on; and it proves the great richness of the mines, that with every obstacle with which the pioneers of a rough and rugged country have to contend, the amount taken out in a few weeks' time reached over one hundred thousand dollars. The gold is coarse, and assays well—nearly nineteen dollars per ounce. I have seen a large bar of French Creek gold, purchased by the Bank of British Columbia, and assayed in the Government Assay Office in New Westminster. It was beautiful gold, far superior to any ever produced in the Cariboo district. The Government of British Columbia have had several of their surveying officers over the new mining regions. They all confirm the glowing accounts given by the miners. Messrs. Turnbull, Moberly, and Dowdney's reports to the Governor have been published in the *Government Gazette*, and speak for themselves. The new creeks head in the Selkirk range of mountains, and as they are all very extensive, there is room for a vast population to work upon them. The district has been given the name of the "Big Bend," from the creeks upon which the gold has been found being close to the place where the Columbia makes a very abrupt turn or bend. The greatest amount of mining has been done on French Creek, which falls into Gold River; the latter empties into the Columbia, above the Dalle de Mort. A large number of claims have located on the Creek, and many "old hands" have done well, but the majority have only prospected their claim. Shep Bailey Company took out $100 a day to the hand. St. Germain Company made from $20 to $30 a day to the hand. "Old Texas" took up ground that prospected over $3 to the pan. He sold a small interest for $800. La Fleur Company, three men, made $18,000 in ten weeks out of a bench, and they only worked 75 feet of ground. The deepest part of the bench is only fifteen feet, but the average is only six feet. Dupuis, a French half-breed, had a claim adjoining La Fleur, and he took out $3,000 to his own hand. In one day he made as much as $800. The following well-known old miners on this Coast have claims on this Creek; Jim Burbes, Bill Anderson, "Judge" Perrier, Gill, Chatman, Martin, Redman, Twentyman, Sam Neal, Jack Jones, Coser, Casone, Jim Thompson, and Clarkson, the packer. The latter, by the way, paid $800 for a piece of ground belonging to La Fleur, and in a week he got back his money. The gold is found in the gravel, and there is almost an entire absence of clay. The bed rock is blue slate, similar to that on Williams Creek. In addition to French Creek, there is McCulloch's Camp, Carne's and Gold Creeks. These have all been prospected with the greatest success. On McCulloch's Creek as high as 35 ounces per day have been taken out by one company from the gravel only a few feet from the surface. The Walla Walla *Statesman* says the new mines are "quite as rich and in every way as extensive as those of Montana." I may state that they have this advantage—they are not one-fourth the distance, and can be reached from San Francisco in eight or nine days, at a cost of little over $50, whilst the Montana will take from six weeks to two months, at a cost of at least $250. It should also be borne in mind that if the miner is not satisfied with the Big Bend he can easily proceed on to Montana or Cariboo, as he is not taken out of his way to either of those places by the Big Bend. I shall now proceed to mention the various routes from San Francisco to the Big Bend mines:

ROUTE VIA. PORTLAND.

	Time.	Fare.
From San Francisco to Portland	3½ days	$25
From Portland to Walla Walla by steamer, 210 miles	4 "	18
From Walla Walla to Colville, 240 miles by land	9 "	walk
From Colville, by steamer to Little Dalles, 250 miles	4 "	$20
From Little Dalles to the mines by land, 60 miles	2 "	walk
Total	22½ "	$63

If to the above is added the expenses of a man travelling from Portand to the mines—19 days, at $3 per day—it will bring the total cost up to $120.

ROUTE VIA. VICTORIA, V. I.

	Time.	Fare.
From San Francisco to Victoria by steamer *Labouchere*	3½ days	$15
From Victoria to Yale by steamer, 175 miles	1½ "	4
From Yale to Savanah's Ferry, 133 miles by land	5 "	walk
From Savanah's Ferry across the Lakes by steamer, 110 miles	1 "	$10
From head of Lakes to Gold Creek, 55 miles by land	2 "	walk
Total	13	$29
Expenses for nine days, at $3 per day		27
		$56

The total distance from Portland to the mines is 760 miles—time, nineteen days, at a cost of $120 From Victoria the distance is 473 miles—time, nine and a half days, at a cost of $56.". . . . Another correspondent, after estimating from an official map the distance from New Westminster to Gold Creek at 393 miles, and placing the total expense from San Francisco to the Creek at $84, says: "Of course, if men walk from Yale to Savannah's Ferry, which they can easily do in five days, the cost of the journey will be $40 less than the above estimate. There are good roadside houses all the way, and meals are never more than $1 25. I look for brisk steamboat opposition from San Francisco to Victoria, as well as on the inland waters of British Columbia, in the spring, when of course fares will be considerably reduced from the figures set down above. As an evidence of the faith which the government of the country have in the mines, they are laying out between $20,000 and $30,000 in constructing a wagon road to Lake Kamloops, from the Grand Trunk road to Cariboo. The Big Bend mines are not more than half way from New Westminster to Cariboo. A new steamboat is in progress by the Hudson Bay Company, at a cost of over $50,000, for running on Lakes Kamloops and Suswap, exclusively to meet the trafic to the Big Bend mines." . . . . Another correspondent, writing from Portland, Feb. 13th, to the Sacramento *Union* says: "The term "Big Bend" of the Columbia arises from the abrupt turn which the McGillivray branch makes at the point where it is joined by the Canoe River (heading with the Fraser) and the stream issuing from Mount Hooker Pass in the Rocky Mountains. The stream s here unite to form the Main Columbia. Within this bend, between the fiftieth and fifty-second parallels of latitude, the new miners are situate. It is believed that for an extent of more than two hundred miles that country is highly auriferous, the diggings being chiefly shallow of surface, easily worked, and exceedingly rich. A number of large creeks have been discovered; the principal ones, however, that are known to possess valuable deposits of the precious metals, are Carnes, McCulloch's, and Camp Creeks. They all head in the western slope of the Selkirk range, the Columbia River being the grand receptacle for their waters. Carnes Creek is from sixty to one hundred feet wide, rapid, and empties into the Columbia about sixteen miles below the Rapids de Mort. Within half a mile of the mouth of the creek, the Hank Carnes and Clarkson companies took out, last fall, $40 per day to the hand in the top gravel. The creek was prospected for many miles up from its mouth, and coarse gold obtained in paying quantities. Several claims were located in the fall, and many men remained over winter to commence operations in the spring. Gold Creek is a large creek, like Carnes, emptying into the Columbia from the east. Very little prospecting has been done upon it, but what has, is most encouraging. From fifty cents to $1 50 to the pan has been taken out. A number of claims have been pre-empted on the main creek as well as its tributaries. More work having been done on French Creek than any other, it is the most important in the district. It empties into Gold Creek. The banks, varying in depth from six to fifteen feet, are gravelly, and the diggings destitute of clay. The creek was discovered in the latter part of last summer, by three French half-breeds, (La Fleur Company), who had it to themselves for some time. They worked seventy-five feet of a bench, the average depth being six feet, and in two months made from $15,000 to $18,000. A packer named Clarkson, who had followed the prospectors, bought a portion of the claim after it had been prospected, and in one week he got back his $800 (the purchase money), and the claim paid as high as sixty-nine ounces in a day, afterward. Owing to the scarcity of provisions, the prevalence of scurvy, and only "flour straight" to live on, he was obliged to quit work with $3,000 for his short season. A French half-breed, named Dupuy, took up a claim next La Fleur's, late in the season. It yielded wonderfully. Having rigged a few sluice boxes and worked in the face of the bank, the dirt paid from the beginning. He took out as high as 100 dollars to the pan, and before he quit work made over $5,000. He crossed the line with his money, but at Fort Sheppard had to pay export tax on his gold. Judge Perrier, an old Californian and Frazer-riverite, worked for a few weeks on his claim, and was reimbursed, as well as his partners, for the long trip they had from Wild Horse creek, from which they returned in time to make expenses before the close of the season. Jim Thompson and Bill Anderson were offered $2,000 for their claim, but they declined it, although they had very little time to work before the winter set in. A claim above them sold for $1,000. The Weller or Shep Bailey claim yielded twenty ounces per day. Myers bought one-fourth interest in it for $1,000. Many other companies did very well, but owing to there being no provisions or proper mining tools in camp, the men were put to great inconvenience as well as severe privations. The creek is of great extent, very promising, and in the ensuing season it is expected will create quite a furore of excitement. A good many claims were located, but the majority were only partially perfected. Late in the season McCulloch discovered the diggings on McCulloch's creek. It empties also into Gold river. It is a small, swift stream, like Lowhee creek, in Caraboo. The gold is coarser than on any other creek in the district. The prospects were as high as from three to four dollars to the pan. The Clemens Company took out from twenty-five to thirty-five ounces a day, as long as they were able to work. Barney Riley (an old Californian) describes the claim as 'shelling out gold like beans.' One piece taken out of the Clemens claim is worth twenty-five dollars. Several claims were taken up and recorded on this creek. Camp creek was one of the latest discovered creeks in the country, but, from the prospects obtained, is not inferior to any of the others. I have conversed with several of the miners who have been through the Big Bend country last fall. They are mostly old California and Frazer river men, whose interests, one would think, would be to keep others out of the country, so that the good things might fall to themselves. They are not so selfish, however, as in no instance did anyone attempt to conceal his honest opinion of the valuable discoveries that have been made and the openings, or rather the alluring prospects, that the new mines offer to the mining community. There is room on the creeks already prospected for thousands, and, from the proximity of the mines to the frontier, provisions will be moderate in price and abundant. It being late in the fall when the most valuable discoveries were made, there was no time to get in supplies before the winter, but in the spring there will be no scarcity. To show the faith which the Governments of British Columbia and Vancover's Island have in the new mines, I will state what they have done. In the first place, they are laying out over $25,000 to complete the wagon road to Lake Kamloops, and have given a subsidy to two steamboat companies of over $60,000 to run direct from San Francisco to Victoria and New Westminster. In addition to this the Hudson Bay Company are building a new steamer on Kamloops Lake, in time for the spring trade, to the mines exclusively, at an outlay of over $50,000. This is evidence sufficient to convince anyone, more especially as the Government of British Columbia have had officers of their own through the mines to report on them before they went to any outlay whatever. I must not conclude without mentioning that the obnoxious gold export tax will be abolished immediately by the British Columbia Government.

New Granada.

The Panama correspondent of an exchange writes last month as follows: The town of Barbacosa, around which the mines are located, contains at present about two thousand inhabitants, principally negroes, and the entire district about six thousand. It is some forty miles from the port of Tumaco, and is reached by canoes, the time occupied by the journey being six to eight days, as the canoes make but little progress against the strong current. Hitherto, many of the natives have made their living by gold washing, but they have worked in such a slovenly manner that their earnings rarely exceeded twelve to sixteen dollars per month. Provisions are brought in considerable quantities from Pasto, by the Indians, and

[CONTINUED ON PAGE 12.]

AMERICAN
Journal of Mining.

[ILLUSTRATED.]

GEORGE FRANCIS DAWSON,
EDITOR.

OFFICE, 37 PARK ROW, NEW YORK.

Published Every Saturday Noon.

TERMS:

SUBSCRIPTION.		ADVERTISING.	
Per annum, one copy -	$4 00	One line [No. p.] 1 inser'n	$ 50
Six months, one copy -	2 25	One Square, 10 lines, one do	2 00
Three months, one copy -	1 25	One Square, do. four do.	5 00
Single copy - - -	10	One Square, do. one year	10 00

Canadian subscribers 25 cents extra for postage.

☞ Specimen copies sent free.

☞ Liberal reductions to permanent advertisers

DESIGNING, WOOD ENGRAVING,
LITHOGRAPHING and JOB PRINTING

Executed in elegant style, on reasonable terms.

Address WESTERN & COMPANY, Proprietors,
No. 37 Park Row, and No. 145 Nassau Street, New York City.

☞ The AMERICAN NEWS COMPANY is authorized to receive orders from city and country dealers for the JOURNAL OF MINING.

NEW YORK, SATURDAY, MARCH 31.

Contents of this Number:

EDITORIALS.—The Overland Route—Compressed Air.—A Glance at the Mining Situation.—Manufacturing and Mining Department of the Treasury.—Salutatory, etc.

NEW ROCK DRILL.—Described and Illustrated.

ORIGINAL PAPERS.—"Petroleum," by Professor Engelhardt; and "Mineral Wealth of Virginia," by Dr. Grant.

MINING SUMMARY.—Latest news from Nevada, California, Idaho, Montana, Colorado, Oregon, Arizona, Pennsylvania, Kansas, Indiana, Massachusetts, Minnesota, British Columbia, New Granada, Mexico, Nova Scotia, Nicaragua, etc.

PATENT CLAIMS.—The latest allowed to Inventors of Mining and Milling Machinery. Processes, etc.

MARKET REVIEW.—Finances, Stocks, etc.

MISCELLANEOUS.—Magnitude of our Western Mining Regions.—Emery.—Interesting Coal Statistics.—Horace Greeley on Gold, Silver and Iron.—Recent Discoveries in Plumbago, etc.

SPECIAL SCIENTIFIC BREVITIES.

NEVADA STOCKS.—Latest advices by Mail and Telegraph.

NEW YORK METAL MARKET.

LONDON METAL MARKET.

SALUTATORY.

Buoyed up by the kind assurances of many influential friends—some of them well known in their several departments of science—I assume editorial control of the JOURNAL OF MINING with a determination, so far as lies within my capacity, to make it a *success*. Puffery is my special abhorrence, and so long as I conduct the JOURNAL nothing of the kind shall be seen in its editorial columns. Politics—in the popular acceptation of that term—will be utterly ignored, because incompatible with the spirit and scope of such a paper. Without any farther promises, I prefer to let the JOURNAL stand upon its own merits.

GEORGE FRANCIS DAWSON.

APOLOGETIC.

A great deal of valuable tabular matter has unavoidably been omitted in this issue, but will certainly appear in that of next Saturday. Journalists and printers will understand the reason when we state that a vast amount of "sorts" were needed; those had to be cast at the type foundry to order, and were not done in time. We are also having "minion" cast for the Mining Summary of our next issue, the use of "brevier" in this having crowded out our Oil Summary.

THE GREAT OVERLAND ROUTE—PAST AND PRESENT.

Nearly twenty swift-winged years have passed since the first intelligence of extensive gold discoveries in the Dorado of the West startled the denizens of the Eastern portion of the United States. Since then, old men of that day have been gathered to their fathers, the middle-aged have become old, the young have become elderly, and the babe in arms now sports the whiskers of young manhood. Nearly twenty years, pregnant with great events in the political, financial, and scientific history of this, and many another nation of the globe, have gone by, and the giant of the New World has outgrown the disease that threatened his young life, and now stands in robust manhoood, towering above even the giants of the Old. Twenty years ago monitors were unthought of. The man that declared a great armed rebellion probable was disbelieved. He who dreamed of the possibility of a million and a half of American citizens engaged in opposing ranks, in deadly conflict, upon the soil made sacred by the dust of Washington, Jefferson, the Adams', and others of the patriot fathers, would have been looked upon as a lunatic, did he give voice to such a vision. Yet these things have come to pass—and more. An old and once faithful ally has been seen to take advantage of our temporary weakness. Autocratic Russia has been seen to grasp with friendly warmth the hand of Democratic America, and the grip was as generously returned. The electric telegraph has been so improved that circuits of thousands of miles are little thought of. The continents have been spanned by these vocal wires, and it is considered feasible to hold even sub-oceanic converse through their instrumentality. The wildernesses of the interior have been made to bloom with the flowers of civilization. The "unexplored Indian Territory" has been divided off into Territories, and many of those Territories have matured into full-grown States of the Union. Our public domain, population, manufactures, scientific knowledge, commerce, mineral and other wealth, have grown amazingly, and our influence and power have advanced in like ratio. With such great interests scattered over so vast a country, not by any means the least noteworthy deed of the period referred to, was the building (and keeping in good order) of the great overland mail route. We send letters to and from Kansas, Colorado, Utah, Nevada, Montana, Idaho, and elsewhere in the extreme West, and think there is nothing strange in *that*—because we are used to it. But go, speak—some twenty years back—to any of that long line of travel-stained emigrants, toiling their weary way up the steep slopes and down the deep gulches of the Rocky Mountains, along the burning sands of the Alkaline Desert or among the drifting snows of the lofty Sierras Nevada; tell him that excellent railroads would take him from any part of the "States" to Atchison, Kansas, and a first-rate Concord stage would gallop him, in a couple of weeks, along a first-rate stage road, from Atchison to a point near the eastern boundary-line of California, from whence he could go by rail and steamboat in a few hours to San Francisco—he would simply say: "Impossible!" Yet all this has been done, by the commanding genius—for it is nothing short of it—and indomitable energy of one man: Ben. Holladay. Some five or six years ago he took hold of the overland stage enterprise, and constructed a turnpike at his own expense—General Bela Hughes (also a man of remarkable energy) superintending the work—for a distance of some 600 miles right through the gorges of the Rocky Mountains, from Central City in Colorado to Great Salt Lake City in Utah! To any person at all acquainted with the topography of the country through which this gigantic undertaking was carried, the successful completion of the work must appear marvelous. Yet in spite of all, Mr. Holladay has triumphed. He seems to hold with France's greatest Cardinal:

"There is no such word as 'Fail!'"

This is literally true of Mr. Holladay, whether we look at his operations on land or water, by stage or ocean steamer. But turning from the creator to his great work, we find that his overland Mail and Express Company runs a daily line of stages from Atchison, Kansas, via Denver City, Colorado, to Great Salt Lake City, Utah; thence a tri-weekly line to Bannock, Virginia and Helena, in Montana, and Boise City in Idaho, connecting also at Salt Lake with daily stages that run through Austin, Carson and Virginia, in Nevada, to Placerville and Folsom, in California, besides running a daily line from Omaha, and a tri-weekly from Nebraska—to connect with the main line at Fort Kearney—and a daily line between Denver and Central Cities, in Colorado. The main trans-continental line of stages, with the various branches, traverse thousands of miles. No less than 156 coaches and express wagons, 825 men and 3,530 horses and mules—1,490 of which are needed to haul supplies for the 250 stations at which changes are made, and the wants of the inner man cared for—are employed on this great thoroughfare. Every reasonable attention is paid to the comfort of the traveler, and if he desires to stop anywhere on the road, and resume a seat when the coach is not full, he is allowed the privilege. We have been thus explicit in relation to the overland stage route because we are frequently questioned concerning it; because there will be a great migration westward this spring and coming summer, and many desire such information; and because we think that the genius that inspired such an undertaking, and the persistent energy that accomplished it, deserve this slight tribute at our hands.

A GLANCE AT THE MINING SITUATION.

It is idle to deny the fact that the present is rather a dull season in the mining stock market. Whether it is owing to the weather, to many recent heavy failures, to satiety, or what not, the fact remains the same. The season is dull; that this is not the fault of the mines is very plain. The gold and silver mines of Nevada, Montana, Idaho, Colorado, Arizona, Oregon and New Mexico, never yielded larger returns. Those of California manifest decided symptoms of improvement. The copper product of the great copper region bordering Lake Superior exhibits no decrease; and the coal, iron and lead mines of Pennsylvania, Wisconsin, Illinois, and other States, certainly hold their own. Most encouraging accounts as to the mineral wealth of Virginia, Georgia, and others of our Southern States also continue to come in, to the great astonishment of those who in their eager westward gaze have hitherto overlooked the vast treasures lying buried almost at their own doors. The petroleum product, in spite of the heavy tax imposed upon "crude," is growing, and when Congress shall have lifted the galling burthen from the producers shoulders, it must become a highly remunerative branch of mineral industry. The excitement relative to Montana and Idaho, does not seem to have been materially affected by the glowing accounts from New Granada, and the more recent reports from the Big Bend mines, in British Columbia, although bearing the imprint of truth, serve but to increase the bent of many adventurous minds to swell the populations of those two favored Territories, as by travelling *via* San Francisco and Portland, to either Montana or Idaho, they might visit Big Bend without diverging much from their line of travel. The coming month of May will undoubtedly witness an unusually large migration to the far West, of those anxious to make their fortunes by practical mining. Already we hear of several large parties in this and other cities, that have been formed for gold hunting, and are only awaiting favorable weather to start on their long journey. Colorado, doubtless, will also receive a fair share of the overland pilgrims into her bosom. In fact *all* the Western States and Territories will be more or less benefitted by this westward movement. As Spring advances confidence in mining investments will doubtless in-

crease; but, after the many severe lessons they have hitherto learned, it is to be hoped that capitalists—whether large or small—will not again embark rashly in wild ventures. The insane spirit of speculation has been too common. Mining can never, as a rule, be profitably conducted, unless as a legitimate business. But *as* a business it can, without doubt, be carried on most remuneratively.

COMPRESSED AIR.

Compressed air, as a motor and medium for ventilating mines, has now been brought into practical and successful operation, and the day cannot be far distant when it will be in general use. Compressors are manufactured in this city, with which a pressure up to 220 pounds is readily attained. Practice at the Mount Cenis Tunnel has demonstrated that at the distance of two miles from the Air Receivers the loss of power is less than five per cent. In several places in Europe, machinery in mines is driven by compressed air, which, when exhausted, cools and purifies the atmosphere. At the mines of the Cambria Iron Works, Johnstown, Penn., it has been successfully applied to driving coal-cutting machinery. Immense expenditures and great loss of time have heretofore been necessary to secure ventilation in mines by the sinking of shafts, and driving air entries, etc. By the introduction of compressed air these outlays can be almost entirely avoided, now that we have a power at hand available as steam for doing our mining work at points where steam cannot be used. We must seek out and set to work the best machinery for drilling the rock and cutting the coal. More than three years of steady work at the Mount Cenis Tunnel, and almost as long in English mines, demonstrates the fact that there are machines to be had which will do good work, and have them we must; if our own countrymen cannot furnish them we must import them or be behind the age. Is it not remarkable that in the department of mining and drilling rocks, few, if any, improvements should have been made, while in almost all other branches of industry the advance has been marked and regular. The time has now arrived for rapid development of the unbounded mineral wealth stored up in the bowels of our western world. That development should, and we trust will, be not only rapid but comprehensive and systematic. To accomplish this desideratum, mine superintendents must disenthrall themselves from the influence brought to bear upon them by the contracted ideas and clannish habits of Cornish mine laborers—perhaps of all men the most obstinate and troublesome to deal with.

MANUFACTURING AND MINING DEPARTMENT OF THE TREASURY.

From Washington correspondence in the daily press we learn that during the past week, Mr. Grinnell, in the House of Representatives introduced a bill "to establish a manufacturing and mining division in the Treasury Department," which it is stated, has for its general design the acquisition and diffusion of information relative to manufactures, and the aiding of Congress in legislating thereon. We presume from its title that the bill has a wider reach than the correspondent indicates; that the duties of the commission to be appointed under its provisions will include the collecting, digesting, and furnishing to Congress information relative to the mining and milling interests of the United States, as well as with reference to "manufactures, consumption of raw material, etc., and the general course of trade with foreign countries." If our surmise be correct, we cannot refrain from entering our protest against such a measure. On the principle that "half a loaf is better than no bread," many persons interested in mining may be induced to give it a lukewarm support; but taking into consideration the vast mineral riches of this country, the immense amount of capital already invested in its mines and mills, and the large revenue (direct and indirect) therefrom derived—to say nothing of the inestimable service rendered to the country during the recent rebellion by these ever flowing streams of hard-cash wealth—we cannot avoid the conclusion that the advocacy of such a half-and-half bill, in Congress or out of Congress, would be an ungracious if not ungrateful act. That which the mining community desires and should have—and which Congress, if desirous of legislatlng for the good of the nation, will take care that it shall have—is a separate, distinct mining Bureau. There will be quite enough work for one commissioner and a dozen clerks in such a Bureau, without bothering about the "course of trade," "manufactures," "consumption of raw material," and what not.

Earthquake.

By telegraph, information comes to hand that San Francisco and other parts of California were visited on the 25th by an earthquake more severe than any in her past history—save the memorable one of October last—but this time Gilroy was the only town that suffered.

Central Pacific Railroad.

It is reported on good authority, that the Central Pacific Railroad—in course of construction from Sacramento City, California, to Salt Lake City—is rapidly progressing. Fifty miles have been completed and the working force will be largely increased this spring.

Colorado's Position.

It is stated by the Washington correspondent of the *Herald*, that "it is claimed that Colorado will be admitted on a pledge of the Senators to go against the President."

Copper Memorial.

The Detroit Board of Trade have adopted a memorial to Congress, asking an increase of duty on copper, so as to protect the copper interest of Michigan.

Magnitude of Our Western Mining Regions.

Few have yet begun to realize the extent of the twelve States and territories on our Western borders, whose vast stores of mineral wealth are yet to attract teeming multitudes to them. California has 158,685 square miles, containing 101,658,680 acres; Dacotah, 148,832 square miles—95,316,480 acres; Nevada, 81,539 square miles—52,184,960 acres; Colorado, 104,500 square miles—66,880,000 acres; New Mexico, 121,201 square miles—78,568,640 acres; Arizona, 126,141 square miles—80,730,140 acres; Utah, 106,382 square miles—68,074,480 acres; Oregon, 84,248 square miles—60,958,720 acres; Idaho, 326,375 square miles—208,878.726 acres; Nebraska, 75,955 square miles—44.796,160 acres; Washington, 66,994 square miles—48.636,800 acres; Kansas, 81,318 square miles—53,043,550 acres; making a total of 1,495,310 square miles—957,720,400 acres, of which only 61,738,546 acres have been disposed of. Idaho alone will make five States as large as Pennsylvania.

Emery.

The world's supply of emery has within a short time been (prospectively) doubled. Hitherto two places—Cape Emeri, in the island of Naxos, and the neighborhood of Smyrna—have furnished nearly all the emery used. A few years ago a mine was discovered in North Wales, and another, perhaps the most important deposit of the kind in the world, has just been discovered in Chester, Mass. This latter yields emery of the finest kind, and which does not rust upon exposure to the air. It is also reported to be capable of doing one-third more work than any other emery in the world. Its non-liability to oxydation also gives it great superiority. This mine is now worked or preparing for work, and, instead of "Turkish" emery being the favorite brand, "American" will be likely to take its place.

Original Papers.

By publishing contributions, the JOURNAL OF MINING *does not necessarily endorse the positions assumed by contributors.*

WRITTEN FOR THE JOURNAL OF MINING.

PETROLEUM.—Number One.

BY FRANCIS E. ENGELHARDT, Ph. Dr., Professor of Chemistry in St. Francis Xavier's College.

The name "petroleum" is given to a number of substances that appear when first formed to have had the same composition, but which were changed more or less according to circumstances by physical and chemical causes which acted upon them during the long periods of time they were enclosed within the rocks of our globe.

The word petroleum is of Latin origin, derived from *petra*, rock, and *oleum*, oil, indicating both its origin and nature. But as petroleum is a substance that was known for centuries—as I shall presently show—it received various names according to its consistency; thus the thin and clearer variety is called naptha, petroleum, mineral oil, Seneca oil and Barbadoes tar; the darker and thicker kind, which at the ordinary temperature forms a solid bitumen: bitumen asphaltum mineral pitch and asphaltum judæicum, from its occurrence in the Dead Sea in ancient Judea.

Petroleum in its various forms was known in most remote antiquity. The Egyptians used it in embalming their dead. The Jews employed it as a cementing material for their edifices, and the inhabitants of ancient Memphis covered the lower parts of their dwellings on the outside with asphaltum in order to preserve them from the dampness of the surrounding soil. Moreover, the present petroleum well of Zasynthus, one of the Ionian islands, was known to the historian Herodotus, consequently more than 2000 years ago.

The Greeks and Romans called it "pitumen" from Pitta, (pitch, as we read in Tacitus, Pliny and Vetruvius,) and the last named author who was himself an architect, considered it as the best cementing material for buildings at that time known. Plutarch described most beautifully the magnificent spectacle of a burning sea of petroleum near Ekbatana, and Deioscorides relates that petroleum was collected for being used in lamps near Girginty, the (Agrigentum of old classic Rome) in Sicily, from whence it derived its name of Sicilian oil.

Even Semiramis, if we can rely on the testimony of the historian Diodorus Siculus, employed it in the construction of her hanging gardens at Babylon, and the walls of that far famed city were built with mineral pitch. Many of the ancient so-called perpetual fires that burned upon the altars of heathen antiquity, are supposed to have been burning petroleum springs. For instance, the holy fire of Bakoo in the province of Shirwan, which even now in the nineteenth century receives religious worship as of yore.

Some also assert that both naptha and bitumen were used as ingredients in the celebrated Greek fire. Eusebius mentions the fact that on the birthday of our blessed Redeemer, an oil well sprang up in the Jewish quarters of Rome flowing only for that one day and then disappearing forever, reminding us of the prophesy in Solomon's canticle of canticles: "Oleum efusum nomen tuum." Thy name is as oil poured out.

The inhabitants of Persia, the Birman Empire, India and China, have since time inmemorial employed petroleum for artific al light, and even the wild sons of the Arabian desert use a solution of asphaltum as a protection for their horses against the stings of insects under that burning sun.

In Modena and Parma, oil was discovered in 1640, and has ever since that time been obtained by sinking wells into the ground. This oil was used formerly for the illumination of the streets of Amiano and Genoa in Italy.

Mr. Young, of Glasgow, Scotland, hearing in 1847, of the discovery of an oil well at Reddings, in Derbyshire, purchased it, and by a refining process of his own manufactured from it a good lubricating oil, till the well was exhausted, when he turned his attention to the distillation of coal, which had been already investigated in 1830 and 31 by the German savant Reichenbach,

who discovered in the coal tar the parafine now so much employed in the manufacture of the parafine candles.

In this country, petroleum was first discovered, according to a legend of the Indians, by one of their chiefs, to whom the Great Spirit had revealed its situation and medicinal properties, and they sold it under the name of Seneca oils many years ago to the first settlers in Pennsylvania. They also used it mixed with various paints, to anoint themselves for war, and employed it in various religious rites.

The early settlers of our country collected petroleum at Oil Creek, Pennsylvania, for medicinal uses, amounting in some years to as much as twenty barrels.

As early as 1819, Dr. Hildreth, of Marietta, Ohio, mentions the sinking of two wells, four hundred feet deep, on the Little Muskingum river, for brine, of which one yielded brine, but the other oil; and he remarks that "the oil was profitable, as it gave a clear, brisk light and was in great demand for factories and workshops."

The same happened to Louis Peterson, Esq., of Allegheny Co., Pa., when he was boring two wells for brine in 1845. They yielded him from twenty-five to thirty gallons of oil per day.

Notwithstanding these successes, it was not until 1850 that a lasting impetus was given to this branch of our now flourishing industry, by Colonel Drake, of Mass., who on the 26th of August of that year struck oil seventy-one feet below ground, at Titusville, Oil Creek, Pa. Putting a pump into operation, he produced about one thousand barrels of oil in a single day. Since that date, as everybody knows, the oil produce of this country has been indeed marvelous, and to him, therefore, more than to any other man, our country owes the greatest gratitude for the rapid development of its oil resources.

Having traced the history of petroleum from the time it was first observed by man, down to our own days, let us come at once to the more important question of its origin and occurrence in our rocks.

A number of theories have been advanced by scientific men as to the origin of petroleum. All agree in considering petroleum a substance which was not originally created as it is now found in the earth, but rather as a product of chemical or physical action, during long ages, upon organic remains, either animal, vegetable, or both. These organic remains were once actually existing upon our globe in the form of animals and plants, which were swept from its surface by some grand catastrophe, buried among the solid rocks, and here acted upon by different agents, such as water, heat, pressure and the like. This action had its final result in the formation of the different oils and bitumens. To be more explicit, I shall state now some of these theories.

One of them, then, considers petroleum as a product of Coal.

It is well known to most readers, that there exist two kinds of coal, the anthracite—a hard shining variety that gives a great heat, but little or no flame; and the softer and less shining variety: bituminous coal, which, when burned, gives volumes of smoke, a bright light, and less heat. But the main difference between the two, and to this I wish especially to call attention, is, that the anthracite when heated in closed vessels such as the gas retorts of our gas works, yields neither gas nor tar, while the bituminous coal produces both in great abundance. The difference is at once perceptible—the one kind contains, besides carbon, such substances as, when heated, will yield gas and tar; the other is wanting in both.

Starting from these facts the advocates of the theory say: All coal was at its first formation bituminous; it contained consequently besides carbon, the elements of gas and tar, but exposed to a higher temperature within the earth, the elements of the two substances, tar and gas, were expelled in the form of vapor from the bituminous coal, and only anthracite ore (pure carbon) remained. Tar and gas, thus expelled, having no possible chance of escape through the rocks above to the surface of the earth, were forced into the crevices and fissures of the surrounding rocks. Here, under a high pressure, they cooled became liquid petroleum, and collected in the large reservoirs or caves, with which the neighboring rocks abounded. Where the surrounding rocks were of a porous nature, such as limestones, sandstones, or schist, the condensed liquid filled their pores; and thus formed those bituminous rocks we meet with so often in the oil regions. Moreover, they hold that the formation of petroleum, and consequently the decomposition of bituminous coal, is not a thing of the past, but that it is going on still, this very day, in the coal fields of the earth. To substantiate this latter assertion, they state the fact, which cannot be denied, that carburetted hydrogen, olifian gas and carbonic acid are formed constantly wherever coal beds are found, and that it only required the condensation of some of these gases to form the oil of our petroleum wells.

This theory, I grant, may be very plausible, and may be even better explained by the use of chemical formulæ, nevertheless there are some very serious objections to its adoption in the greater number of cases, where oil is found, especially in this country.

The chemical constitutions of most of the petroleums—according to Cahours and Pelouze, two eminent French chemists—that have been investigated, never contain benzol nor any of those homologous carburetted hydrogens that are found in the oils derived from bituminous coal by distillation, and the conclusion which we consequently draw is, that petroleum could not have been formed from bituminous coal, neither by a slow nor a quick distillation, nor by a low nor high temperature, but if formed at all from coal, then in a manner entirely different from that implied in their theory.*

Moreover, the substances contained in petroleum, are very much like the compounds, which are formed of compositions, that are known to chemists by the name of fatty acids, and their alcohols, when exposed to a higher temperature.

Secondly: Petroleum is found not only in the neighborhood of coal fields but much more frequently in those regions where coal fields do not exist or are hundreds of miles distant. Whence did the oil come which is found in these localities? Shall we suppose the oil forced its way through the solid rock for hundreds of miles? That certainly would be tasking our faith in purely human expositions of phenomena too much.

Thirdly: Petroleum is found in rocks that are hundreds of feet below the coal bearing strata, and consequently it was formed, if we rely on geological science, many centuries perhaps before the coal measure came into existence.

Fourthly: Every coal stratum, as is well known, has a bed of water-proof clay immediately under its own surface; if therefore there was actually any oil formed from bituminous coal, here would be the very place to find it. Is it so in reality? No, there are no oil wells found, so far as I am aware, within the coal beds on this continent.

Fifthly: The fact that carburetted hydrogen, olifian gas, and carbonic acid, are daily formed in the coal mines, proves nothing, since the same phenomena are daily observed in rocks that contain neither coal nor bitumen, but merely organic remains.

For these reasons, to which others might be added, we are forced to abandon the theory of the formation of Petroleum from bituminous coal alone, and examine another on its merits.

The defenders of the next theory, the one perhaps now more favored in this country, assert:

That Petroleum is the result of a chemical decomposition of such plants and animals as were in existance at the period when those rocks that now contain bituminous liquids were formed.

They suppose that both vegetation and animal life partly disappeared, were buried beneath the rocks, and thus buried were changed into Petroleum.

For this latter assertion the fact is quoted, that Mr. Wall found at the Island of Trinidad, portions of wood that were partly converted into bitumen which he could remove from the woody fibre. Later observations have strengthened this fact.

The chemical changes that may have taken place in the woody fibre are now sufficiently well understood, as Mr. Stery Hunt of Canada, says to favor the idea of its transformation, or rather decomposition into petroleum-like substances, bituminous coal and even anthracite, by the giving out of variable proportions of marsh gas, water and carbonic acid. We have therefore, as the first product of the chemical decomposition of wood, petroleum-like substances; as the next bituminous coal; and as the last result, anthracite, or nearly pure carbon.

But the question may be asked first: Did animal and vegetable life actually exist at that distant time?

Yes, because the rocks themselves, those great monuments of by-gone ages, put up as it were by Almighty God, like milestones on the track of time, contain within their very substance, if we could say so, hundreds, nay even hundreds of thousands of petrifactions, both animals and plants, that have forever passed away. Certainly there was sufficient tissue and fibre to form all the petroleum contained in those rocks; especially when we consider, as Dr. Stephens remarks, that only a few specimens of the many that existed became petrified, as decay is the rule, and petrifaction the exception in nature. The last named gentleman, an eminent geologist of our city, has made lists of the petrefacts found in the upper Devonian strata, according to which one hundred and nine species of plants and six hundred and thirty-nine species of animals are described. How many there were that left no trace of their existence, no man is able to tell.

Secondly: It may be asked; is it possible that even animal matter may be changed into petroleum-like substances? Yes, we may suppose so, because, according to the celebrated chemist and geologist, Stery Hunt, of Canada, the animals of those periods belong, for the greater part, to the lower order; and if from the chemical composition of the lower animals, as they exist to-day, we may judge of those that existed when rocks containing petroleum were found, we may assert that the composition of the former is like that of the latter, and these are, according to chemical investigations, destitute of nitrogen, and their constitution, chemically speaking, resembles very much that of woody fibre.

Again: Even animal tissue, rich in nitrogen, has changed, under advantageous circumstances of ground, into fat. As a proof of my assertion, I need only remind my readers of such places as the old Potter's field, of this city, located between Forty-ninth and Fiftieth streets and Fourth and Madison avenues. When the human bodies there buried, perhaps only sixty years ago, were exhumed for removal, numbers of them were found entirely changed into a fatty matter, called Adiporcira. Why may not such bodies, if they remain undisturbed, perhaps for centuries, change finally into petroleum-like substances.

Again: Numbers of the petrifactions themselves, enclose bitumen within their very shells, which some may hold, with as much right, to have been formed from animal tissue, which they once contained, as others to deny, such a transformation.

Again: Some of the petroleum, especially that of the Canadian wells, has a peculiarly strong and unpleasant odor, which fact favors more, as some hold, the supposition of its formation from animal tissue than from woody fibre.

* The presence of benzol (the benzol series) in some Canadian petroleum, seems to have been proved by C. Scholemmer, Esq. He distilled the oil and treated the portion boiling below 150 deg. centigrade, (302 deg. Fahrenheit,) with concentrated nitric acid. The action was violent. Diluting the thus-formed acid liquid with water, heavy liquid nitro-compounds separated possessing the odor of bitter almonds. After he had separated the heavier compounds from the lighter ones, he added to the former, tin and hydro-chloric acid, and obtained thus a solution which, when distilled with caustic potash, yielded a distillate, which not only possessed the odor of aniline in a high degree, but also gave, with a solution of bleaching powder, the most distinct reaction of aniline. Moreover, the reaction of Rosaniline was obtained by him by heating a few drops of the oily distillate with bi-chloride of mercury.

Written for the Journal of Mining.

MINERAL WEATH OF VIRGINIA.

By Dr. E. H. Grant—late State Geologist of Virginia.

The most profound mystery of America is that there exists a belt of country on the Atlantic seaboard, within a few hours travel of New York, challenging comparison in quality, quantity, and extent with any other mining region of the globe—which has been passed by and neglected to give

preference to far distant regions. Of course some cogent reason must exist, for this anomaly among a people ordinarily supposed to be awake to the opportunities of obtaining wealth, and I propose to briefly consider them. The first and most important is that the few efforts which have been made in time past, have employed ignorant and untrustworthy slave labor; having neither energy nor self-respect, because held in a position anomalous to that designed for the human race—void of family ties, with labor unremunerated, without any legal rights or privileges, and subject to the caprice of their masters. The world has long since realized that the capacity of any class, however menial their employment, is enhanced by their personal intelligence, liberty and civil privileges. The second difficulty has been, that the superintendents and mining engineers have rather been chosen for their family position and social influence, than their practical knowledge of mineralogy and principles of mining. The third trouble has been a wasteful expenditure of money on utterly useless machinery. I have knowledge of one mine where over $150,000 has been spent for steam-engines, pumps, and shafts, which cost $100 a day, besides laborers' wages, to keep in running order, whilst on the same property existed a most valuable water power, and all the ore could have been extracted by a tunnel above water level which would have drained itself, and brought the ore to the works on a descending grade. I merely mention this as an illustration of the wasteful method which has invariably been adopted in working these mines in years past. The fourth obstacle has been the want of sympathy towards the few who have engaged in mining operations, originating, mainly, from the public interest being wholly concentrated on slaves and tobacco.

All that portion of Virginia east of the Blue Ridge known as the Piedmont district, bounded by the tide-water district on the east, is resting upon the primitive strata—Cambrian and Lower Silurian—and has been upheaved by plutonic and volcanic action. The valley of Virginia is of the secondary formation, and owes its position in the Shenandoah district mainly to plutonic, in the south-western to volcanic agencies. There has been a vast diluvial wave overspreading the State, giving evidence, in some counties, as Botetourt, of glacial action, and in others of fluvial deposit. This drift belongs to the Eocene period, and in many parts is metalliferous. There is no correspondence between the conformation of the surface of the earth and the position of the subjacent strata, except in the mountain ranges, as the valleys are mainly those of erosion and not of subsidence. The character and position of the metalliferous strata more closely resemble those of Europe, than those of Lake Superior and Missouri. There are more troubles, trap dykes, contra-lodes, and faults, than properly belong to plutonic upheavals. The igneous forces have had a much more powerful influence in the production and position of the metalliferous deposits and veins than either the aqueous, the electro-chemical, or magnetic. But since their origin they have been greatly modified by these other agencies in the diluvial deposits, but retain their original character in the subjacent strata. The metalliferous veins are rarely parallel to the strata, are frequently crossed and impoverished by fissure veins, and belong, especially in the south-western valley, to the same formations as those of Freiburg and Cornwall.

The greatest difficulty in exploring the mineral regions is the vastness and peculiarity of the drift, which frequently misleads the miner by affording surface indications remote from the true veins. Especially is this true of the auriferous belt. There, a drift of pay dirt, averaging a foot thick, has overspread a large extent of country, which frequently is found rich and constant, remote from fissure veins. This drift is not so thick as that of California, but it is easily stripped and is equally extensive, and has, in many places, yielded as much to the hand. The character of the placer gold is mostly coarse, nuggets of large size having been frequently found. I have seen many weighing over an ounce apiece, and have one weighing about two ounces, which has been declared, on careful inspection, to be superior to Australian gold.

The gold ores which have proved by test and assay most profitable in Virginia, do not usually show gold under the lens. It is, therefore, fine, and in many cases may be chemically united with the chlorides and sulphurets and be precipitated by water or heat in the process of extraction. The best gold ores of Virginia—the sulphurets of arsenic, iron, lead, copper, and ferruginous and aluminal clays, and the talcose slates—have never been worked to any extent. Therefore, they have yet to become the subject of exploration and practical manipulation. I have made several tests, which warrant me in declaring that these sulphurets and clays will yield gold equal to any ores hitherto brought before scientific and practical mineralogists. The usual rule in mining in Virginia has been, that at a depth of fifty feet and upwards sulphurets predominated, and heretofore, owing to want of knowledge of method of treatment, the operations then ceased, and new shafts were sunk in the decomposed ores which constituted the surface of the veins. These ordinarily yielded from $10 to $35 a ton by assay, but much less as worked by inferior labor with the rudest processes—pans and rockers. Sluices and long toms are comparatively unknown, and hydraulic mining has never been attempted in Virginia.

The greatest difficulty in tracing the lodes has been the discrepancy between the surface and subjacent strata, the frequent intervention of troubles from trap dykes, granite and other non-metalliferous strata, the frequent intersections of contra-lodes, often of very diverse character from the vein in course of exploration, the rapid transition of the ore from kindly to intractable, from oxides to sulphurets, and the necessity of providing means to remove the abundant influx of water.

When it is taken in consideration that these mines, which can challenge comparison in quality and quantity of ore, have such great advantages in accessibility, economy of working and transportation, abundance of timber and water, are in fertile regions, having a mild and salubrious climate, where mining operations can be successfully prosecuted every month in the year, it seems impossible to believe that there will be any hesitation in developing such valuable resources. It is the surest and best known, the most accessible and advantageous field now open to the capitalist and miner in America.

MARKET REVIEW.

We notice that since August last there has been a decrease in the public debt of some $46,000,000, the amount standing now in round numers at $2,758,000,000. Under these favorable circumstances gold has gradually fallen, and the money market is now controlled by Government, not by speculators. The gold market is steadier, ranging on Thursday, from 128⅛ to 127¾, the supply of gold more abundant, although still heavily over-sold. Foreign exchanges are dull in face of the heavy amount of bills on England and France, drawn against cotton shipments. The "China" brings the report of an advance of ¾ on cotton, which naturally affects the exchanges here. The best bills on London were done at 107 per cent., good bank credits at 106¾ per cent.

The general rate for loans on California is 5 per cent., varying from 4 to 6 per cent, at which latter rate there is an excessive supply.

The best commercial paper is discounted at 7 *a* 7½ per cent., good business notes 8 *a* 9½ per cent., second grades are not readily taken.

In government securities the sales are larger and rates steadier. 7 30 per cents. are firm at 100¼, 5 20's at 104⅛ per cent., and 10 40's at 92 *a* 92⅛ per cent. In Railway Stocks we have to note an unusual excitement in Erie shares, which varied from 79 to 75¾ at Thursday's board, closing at 77¼.

Rock Islands also fell from 116 to 111 per cent. Other Railway stocks show no particular change, the tendency being, however, downward.

With regard to the Boston market, our correspondent writes: '*Boston and Kentucky*' sold readily a month since at $2, now dead at 95c. asked—unproductive. *Botolph Oil Well Co.* soon to be put on your market, we believe, at about $3—they own entire the celebrated Homestead Well on Pit Hole and fifty acres of land in fee—production fallen off to a few hundred barrels daily; not active. *Everett Oil Co.* Old stock has long been dull, *a* from 25c. to 50c.; preferred stock (paying about 3 per cent. monthly on $3, from its Pit Hole interests), has sold (January 25, 1866,) at $3.50, and about that time large sales were made at about $3, but it can be bought for $1.25 at present, and is dull of sale. *Indian Spring*, after a long season of inactivity, has become somewhat inquired for at 50c. to 60c. on the strength of late purchases of land in Canada, and although it may go lower, is looked upon as a good purchase at these figures. Mass. and Oil Creek having advanced from 30c. to 55c. within a few days, has become quiet at lower figures, and a further decline is looked for It may touch 25c. *New England.*—There is some inquiry for it, at the low figures it has steadily kept for several months, say 13 to 15 per cent. *Pepper Well Petroleum Co.*, owning the Pepper Well at Bothwell and other property there, has just been organized as a Company, from the old Pepper Well Association, and no new stock has as yet changed hands, although it will, doubtless, be the most active on this market, as the old stock has been a great favorite here, having paid two 25 per cent. dividends within a few months. *Belmont Coal* is cheap at $5, and *Harleigh Coal* is also considered so at $45, as it pays 20 per cent per annum on $100, and not very long since sold for $108 *Locust Dale Coal* very seldom changes hands; it is a good thing, and is held strongly for investment. *Mammoth Vein Coal*, being about to levy an assessment of $10 per share, it has declined rapidly from $15 to $2 and $3. Sold Mch. 19 *a* 1,50—they own the most valuable colliery in the United States, perhaps, but have not had the money to carry it on. It seems cheap at $5, even with the prospect of the large assessment. *Mt. Pleasant* is sold occasionally, at about $22.50 to $23.50. Short Mountain is dull, although a pet with many coal operators—held at $26.

The Supreme Court of the United States recently decided the case of Michael A. Nolan and others, vs. the Board of Assessors of the city of Albany, defendants in error, at the suit of Adam Van Allen, plaintiff in error, and other cases. The question presented was, whether the shares of the stockholders in the banking associations created under the acts of Congress, which provide for the creation of national banks, can be subjected to taxation by State authorities. Associate Justice Nelson delivered the opinion of the Court, holding that shares held by individuals were not a part of the capital of a bank, and must be regarded as personal property of shareholders, and as such subject to taxation by the State within the provisions of the act of Congress; but that the judgment of the Court below must be reversed on the ground that there was a discrimination between the shares of these banks and the capital stock of the State banks. Chief Justice Chase read a minority opinion, not being able to concur that a State had the power claimed, which was an indirect mode of taxing the national securities, which was not authorized or intended to be authorized by Congress.

In the case of Cutting, Fisk and others, the Court held that a broker is chargeable on purchases of securities made on his own account and for his own benefit, the same as on his commissions when purchasing for others.

Yesterday being Good Friday, there was no regular business on the Stock Exchange.

With regret we mention the suspension of the great banking firm of Culver and Penn, which is attributed to the recent depression in the oil business and decrease in value of oil lands, besides the fact that their assets had for some time been locked up in the Pithole and Keno Railroad, which was constructed at their cost.

The Ninth National Bank, we understand, is now turning its attention to the accounts of merchants and business men. The Directors, feeling the importance of standing by the community in the same

degree that they did by the Government, when it needed money, now offer to discount business paper and make collections on the best terms.

The well known Banking House of Jay Cook & Co. have opened an office at the corner of Nassau and Wall streets in this city. They now have offices in New York, Philadelphia and Washington. We presume, from the growth of their California business, that they will soon be compelled to open a branch in San Francisco.

The metal market is dull, with a tendency downward. In Iron there is a great demand, 1,000 tons No. 1. American Pig, was sold at $41. Steel is unchanged. In Copper the market for Ingot has been unsettled, though latterly more firmly held. Lead in small demand, prices somewhat lower. In Tin not much doing, prices lower both in Pig and Plates.

In Coal, prices are unsettled and the arrivals large; the price from yard is $6 to $9.50 for nut and grate sizes; Gas Coal in better demand Haliburtons Orrel $9.50 cash.

From the Pottsville *Miner's Journal* of March 24th, we learn that the quantity of coal sent by rail this week is 52,800 tons, by canal 20,728 tons; for the week 73,528 tons, against 68,196 tons for the corresponding week last year.

The trade continues dull and prices rule low, too low to remunerate those engaged in the business.

The increase for the week is large, compared with the corresponding week last year.

The sales of Scranton coal at auction show a considerable decline on the prices obtained in February.

The low rates at which coal is now selling will cause it to penetrate distant markets and materially increase the consumption.

We learn that arrangements are being made to connect the Shamokin Valley and Pottsville Railroads with the Lehigh and Mahoney Railroad (known as Quakake) at Mount Carmel, by which passenger trains will run direct from New York to Erie *via* Sunbury. The connection, it is said, will be completed by the 1st of May.

The New Boston Coal Co. are pushing their lateral railroad from the mines at New Boston very rapidly. They expect to have it completed by the 1st of June.

As to foreign coal, we find from the London *Mining Journal* that the China Steamship Company have amalgamated with the Labuan Coal Company for the purpose of further developing the coal trade from Labuan. The produce of the mines last year was 20,000 tons, two thirds of which was good steam coal. The pit is sunk to a depth of 45 feet only, and in it are four good seams of coal—a 5 ft. seam, a 3 ft. 6 inches seam, and the lowest a 12 ft. seam, and the engineer, who was present at the meeting, and who was about to return with his family to Labuan, stated that he believed the whole Island contained coal in larger or smaller quantities. They were on the eve of getting a grant from the British government of the whole of the timber on the Island.

The prejudice against the qualities of the coal was being overcome, and the price had risen from 20s.(the price at which it was sold two years ago) to 43s. The cost of raising the coal is 9s. to 10s per ton, the average price of English coal at Singapore is 47s. 6d. to 52s. 6d. per ton.

It was found that the small coal contained a large per centage of petroleum, and that the refuse was available for patent fuel.

The great difficullty that had been experienced was with respect to labor, for which they employed coolies from China, Singapore, and elsewhere.

Salt, both Liverpool and West Indian, have been in demand, the former at $1 80c. *a* $1 85c. for ground. $2 70 *a* $2 80c. for fine. Ashtons $3 50 *a* $3 60c., Turks Island at 50c.

The quantity of salt consumed in the United States, is 28,000,000 bushels, and of this one half is imported.

The Saginaw salines, in 1860, yielded 20, 000 bushels, but in 1865, 2,260,000.

The Onondago works have increased their supply by over half a million bushels every year for the past five years, other works have also greatly increased their consumption, and fresh brine springs have been discovered, so that there is some prospect of being, in a few years, independent of foreign countries, particularly as believe the present mode of manufacture is capable of great improvement; and when we look at the increase in the British production, which, during the past sixty years, has increased from about 200,000 tons to 2,000,000 tons, of which 200,000 is consumed in the British alkali works alone.

OFFICE OF J. A. THERIOTT & CO.
PETROLEUM AND PRODUCE BROKERS,
NEW YORK, No. 5 WILLIAM STREET,
March, 30, 1866,

The market was quiet during the first of the week, and prices ruled in favor of purchasers; but to day, owing to the more favorable advices from Europe, the market has become firmer, and higher prices have been obtained for both Crude and Refined—There has been a fair business done in contracts for future delivery, at fair prices. We quote crude oil on spot, 26½ *a* 27c.; future delivery, 27½c. Refined in Bond on spot, 39 *a* 41½c: future delivery 44 c. Refined, free of tax, one pot 56 *a* 59c. future delivery 62c: Refd', in Bond, in tin cans, 49 *a* 50c. Receipts of Petroleum in N. York, since Jany. 1, 1866, bbls. 242,559: same time 1865, bbls. 98,482: Exports of Petroleum from New York, since January 1, 1866, bbls. 179,670: same time 1865, bbls. 44,419.

Respectfully yours,
J. A. THERIOTT & Co.,
Brokers, No. 5 William street.

NEVADA STOCKS

San Francisco Quotations.

LATEST BY MAIL.

NAME.	FRIDAY, February 23.		Sales per week Ending Feb. 23	
	Open'g	*Clos'g*	*Shares.*	*Amount.*
Sierra Nevada	$ 8½	$ 8½	16	$ 133 00
Imperial	121	120	619	73.151 00
Gould & Curry	1030	1030	39	19.750 00
Chollar—Potosi	396	324	407	86.677 00
Yellow Jacket	875	390	254	130.787 00
Bullion	.....	.....	359	23.163 00
Crown Point	.....	.....	88	80.920 00
Belcher	185	200	81	25.352 00
Overman	54	53	211	11.193 00
Ophir	425	420	683	301.571 00
Hale & Norcross	990	990	164	221.891 00
Exchequer	7¼	7¼	456	3 392 00
Savage	800	840	220	166.126 00
Empire Mill	185	175	83	14.999 00
Alpha	240	255	101	26.128 00
Blue Ledge	2¾	2¾	295	655 00
Lady Bryan	2½	2½	823	2.757 00
Daney	7¼	7½	250	2.950 00
Wide West	10	10	187	1.820 00
Chas. Caney	.....	.....	.....	.....
Real del Monte	.....	.....	9	31 00
Confidence	59	59	285	1.631 00

LATEST BY TELEGRAPH.

SAN FRANCISCO, March 28.

Name.	Bid per foot.
Gould & Curry	1050
Savage	1085
Potosi	425
Ophir	735
Hale & Norcross	930
Crown Point	1375
Yellow Jacket	860
Alpha	410
Imperial	130

NEW YORK METAL MARKET.

[CORRECTED WEEKLY.]

ANTIMONY.	Regulus, per lb	13 and 13 1-2 c.
	Crude,	
BISMUTH		
BORAX		35 c.
BRIMSTONE		4 3-4 c.
	Crude, per ton	
COPPER, Ingot	Lake Superior, per lb. cash, 30 *a* 31 c.	
	Baltimore,	
	Pig Chili,	
	Bolts	
	Braziers	
	Sheathing,	50 c.
	Yellow metal,	37 *a* 40 c.
IRON—PIG,	No. 1 Scotch, per ton,	$45 *a* 47
	No. 1 American,	43 *a* 45
	No. 2, "	
	No. 1 Charcoal	
BAR.	Swedish, ordinary sizes	1 60
	Amer. & Eng. refined	1 17 *a* 1 23
	" " common	1 10 *a* 1 15
	Rails, Amer. currency	85
	" Eng. gold	56
	Horse shoe iron	1 45 *a* 1 50
	Rods 5-8 and 3-16 round and square	1 22 1-2 *a* 1 85
	Band	1 50
	Nail rods, 5-8 and 3-16, 1	22 1-2 *a* 1 85
	Hoops	1..55 *a* 2 20
	Sheets, Russian, per lb	32 *a* 35
	" English "	7 *a* 9 1-2
	" American "	25
	Boiler Plates, Eng,	
	" Amer	
STEEL.—Best cast in Bars, war		22
Best sheet cast "		22
Best cast circular saw plates *a* 46 in		28
Double shear steel, war		22
Single " "		19
Montague & Co. C. S. in bars		c. 19
Round machinery cast		15
Best German		15
Govt. German		12
Eagle German		13
D. Blister, war		19
W. Jessop open blister, war		19
Double refined		24
Stone Axe shapes		24
Common blister		13
2d quality sheet		10
3d quality sheet		16
LEAD. American		
German		8 32 *a* 8 55
Spanish		8 32 *a* 8 55
English		8 32 *a* 8 55
Bar, per lb		10 1-2
Pipe and sheet		14
TIN. Banca Govt., per lb., gold		27
Straits		23 1-2
English		23
TIN PLATES.—IC, 10-14 prime charcoal		$15
1X 10-14 " "		14 3-4
IC Coke Plates		11 1-2 *a* 13
Ternes IC 14: 20 ch		13 1-2 *a* 14
" " Coke		10 1-4 *a* 10 1-2
SPELTER. American, per lb		9 1-4
Foreign "		9 1-4
ZINC. Mussulman & Amer		13 1-2 *a* 14 1-2
SOLDER. No. 1,		24
No. 2,		22

LONDON METAL MARKET.

LONDON, March 9th, 1866.

		£.	s.	d.	£.	s.	d.
COPPER.	Best selected...Per ton,	99	0	0			
	Tough Cake & Tile "	96	0	0			
	Burra Burra..... "	98	0	0	100		
	Copper wire....Per lb.			12¼			
	Do. Tubes.... "			13¼			
	Sheathing & Bolts Per ton,	101	0	0			
	Bottoms..... "	106	0	0			
	Old (Exchange.)..."	87	0	0			
IRON.	Bars Welsh in London	7	10	0	8	0	0
	Do., to arrive	7	10	0	7	12	6
	Nail Rods	8	7	6	9	5	0
	Do. Stafford in London	8	15	0	8	17	6
	Bars....Do.	8	15	0	10	0	0
	Hoops...Do.	9	5	0	10	10	0
	Sheets, single	10	7	6	11	0	0
	Pig No. 1 in Wales	4	5	0	4	10	0
	Refined Metal, Do.	4	0	0	5	0	0
	Bars Common Do.	6	15	0	7	5	0
	Do. Merch. Tyne or Tees.	7	10	0			
	Do. Railway in Wales	6	7	6	6	10	0
	Do. Swede in London	11	10	0	12	0	0
	To arrive	12	0	0			
	Pig No. 1 in Clyde	3	18	6	4	7	6
	Do. f. o. b. Tyne or Tees	2	9	6			
	Do. Nos. 3, 4, f. o. b. Do.	2	6	6	2	5	6
	Railway Chairs	5	10	0	5	15	0
	Do. Spikes	11	0	0	12	0	0
LEAD.	English Pig Common	20	5	0			
	Do. ordinary soft	21	0	0			
	Do. (W. B.)	22	15	0			
	Do. Sheet	21	10	0	21	15	0
	Do. Red Lead	23	10	0	24	0	0
	Do. White	27	0	0	30	0	0
	Do. Patent Shot	23	15	0	24	0	0
	Spanish	20	0	0			
	Sheets per lb.			11			
	Wire "			10½			
	Tubes "			11¼			
STEEL.	Swedish in Kegs rolled) per ton	13	0	0	14	0	0
	Do (hammered)	15	0	0	16	0	0
	Do. in faggots	16	0	0	16	10	0
	English Spring	19	0	0	23	0	0
	Quicksilver per bottle	8	0	0	nom.		
SPELTER.	Foreign per ton.	24	0	0			
	To arrive "	24	0	0			
ZINC.	In Sheets	30	0	0			
TIN.	English Blocks	91	0	0			
	Do. Bars in barrels	92	0	0			
	Do. refined	94	0	0			
	Banca	88	0	0			
	Straits	85	0	0			
TIN PLATES*	I C Charcoal 1st qu. pr. bx.	1	15	0			
	I X Do. 1st quality	2	1	0			
	I C Do. 2nd quality	1	13	0			
	I X Do. 2nd quality	1	19	0			
	I C Coke	1	8	0	1	9	6
	I X Do.	1	14	0	1	15	0
	Canada Plates per ton	13	10	0			
	In London: 2/ s. less at the works.						
	Yellow Metal Sheathing per lb.			9½			
	Sheets per lb.			9¼			
	Indian Charcoal Pigs in London	7	0	0	7	10	

* At the works, 1s. to 1s. 6d. per box less.

Mining Summary.

[Concluded from Page 7.]

jerked beef and potatoes can generally be procured at fair prices. The cost of everything is, however, rising, in view of the influx of foreigners, of whom there are now about fifty at the mines, and the transportation of passengers from Tumaco to Barbacosa has recently been raised from three to ten dollars. Most of the necessaries of life can be procured at Tumaco, but some light woollen clothing, tents and mining implements, would be useful articles to take along. A great deal of rain falls at the mines and on the river; but India rubber clothing would be too warm, while a pair of blankets would be of excellent

service, as they could be used as such at night, and as a *poncho* in the day time. Mosquitoes are large, numerous and troublesome, so that a net is a desirable article. Thus far no quartz mines have been discovered, those worked being placer diggings, which exist extensively all over the country. A party of five Californians, who went there some three months ago, are now doing very favorably. They entered into a contract with the owner of a mine to work it on joint account, giving him half At first they took out from four to fifteen pounds per week, but since they commenced tunneling they are realizing from fifty to sixty pounds weekly, and our informant is satisfied that men who understand the business, are steady, and can keep their health, will meet with great success. Of those who have already gone there, several have been laid up with fever, which, of course, discouraged them, whilst others got on well. The last batch who went there had not got to work when our informant left; but in a few weeks more I shall have further particulars. I further call the attention of those bound to these diggings to the fact that they should not come without the necessary documents for entering their goods and chattels. The government of Colombia has rented the Custom House to an English company, and this company employs Englishmen to collect the duties. This is the reason why they are very strict in having the revenue laws faithfully executed. The duties are very trifling, but the fines pretty severe, and nobody can give as an excuse his ignorance of our laws, because our Colombian Consul will undoubtedly furnish all the information which may be desired. This law requires that three Spanish invoices be made out of provisions, implements, and merchandise imported into Colombian ports, of which the Colombian Consul keeps two, to be remitted to Bogota and the respective port. Besides, the ship's manifest has to be accompanied by a *soborbo*, which has also to be made in triplicate.

Nova Scotia.

The *Colonist* of a late date contains a tabular statement of the quantity of quartz raised, and yield per ton, the number of mines and miners at work in the different districts, etc., for the quarter ending December 31st, 1865. The total yield of the precious metal for the above period was 6,044 ozs., 6 dwts., and 15 grs., against 5,457 ozs., 8 dwts., and 5 grs. of a corrosponding quarter of 1864. . . . A lecture recently delivered by Gold Commissioner Hamilton, at Halifax, is thus synopsized by a contemporary: The author commenced with a general description of the geological character of the gold districts of the province, reviewing in order the Silurian and Devonian formations, and giving an estimate of the area covered by them. The mountain ridges, crowned with chaotic masses of slate, thrown into every conceivable, or rather unconceivable position, with granite boulders resting at intervals on their rugged slopes; the courses of streams, as they rippled along beneath the shade of birch and maple, granting at intervals to the prospector the much-coveted washings from which the welcome grains and penny-weights of the yellow ore, with here and there a moderate nugget, were derived, were discoursed upon, and helped to give a zest to the more scientific portions of the paper. It appeared that no quartz-veins in this colony, properly mined, had failed to give some proportion of gold; although, of course, in many cases, that proportion was small in comparison with the amount of foreign matter crushed in order to obtain it; but, to make up for this deficiency, the well-known abundance of the metal in particular districts was enough to cause renewed exertions to be made, which rarely failed to repay the extra labor bestowed upon the undertaking. In some districts, quartz-veins occurred so often, that no less than thirty had been observed in a distance of 160 feet, and twenty-five feet of quartz had been found in a distance of 250 feet. These veins were all covered by a mass of drift. Many lodes that had been abandoned as unprolific were now in process of working by other hands, and found to be some of the very best in the province.

Mexico.

For many years, says a La Pay (Lower California) correspondent, "our mountain gulches have yielded gold, the natives making generally fair wages after the annual rains. The late dull times have sent some of our old California miners to prospect the *placeres*, and the result has been the discovery of pay dirt in abundance. Several companies have been formed, sluices are being erected, and before the next steamer leaves we may expect to know the result." . . . Another writes, Feb. 14th: We have had a little excitement here in the way of placer gold diggings, which have been found to exist some miles south of the San Antonio and Triunfo silver districts. A number of sluices have been constructed, and sufficient gold taken out to pay four and five dollars per day to the man. The diggings, so far as discovered, cover an area of about forty square miles. Water is yet scarce, but it will be brought to the place if gold is as abundant as some persons believe. The general appearance of the district is very similar to that of the auriferous hills of California.

The silver mines show little change. The Triunfo Company, which owned several of the best developed claims, has, if rumor be true, sold out to a New York Company, which will greatly enlarge the reduction works and conduct the business on an extensive scale. Mr. Mier has a mill here, and I have no doubt that he will make it profitable. Another mill is also at work with a new process, which, it is said, is very successful. If it were not for the war much more would be done. Mexico needs peace.

Falkland Isles.

A second very important discovery of coal has been made in the eastern island of that valuable British possession, the Falkland Isles. This coal seems to be different from that found by Mr. Ramsay Cooke, R. N., in 1863, being highly bituminous, and judging from a surface specimen shown to us promises to be an excellent flaming coal for steamers. Those discoveries have very great importance in consideration of the advantageous situation of those fine islands as a naval and coaling station for steamers to and from the Pacific.

Nicaragua.

There is considerable excitement in Nicaragua concerning recent reported discoveries of gold in the Chontales and Santa Rosa Districts, on the east side of Lake Nicaragua. English capitalists are said to be investing, and the mines are yielding fair results.

Patent Claims.

INTERESTING TO MINERS, MILLMEN, METALLURGISTS, OIL-MEN AND OTHERS.

The following claims have recently been issued from the United States Patent Office:

53,189.—Drilling and Driving Machine.—Israel M. Rose, New York City. Antedated Feb. 16, 1866:

I claim, First, The arrangement of the slide, D, pulley, b and ropes, a and a', substantially in the manner and for the purpose described.

Second, The combination of a paying out contrivance and tappet wheel E, with the suspension rope, a, and drill rope, a', substantially as described.

Third, The tappet wheel shaft, B, eccentric, e, pawls, c, c, and ratchet wheel, b', with the flanged drum, C, ropes, a, and a', all operating substantially as described.

Fourth, The tappet wheel, E, constructed substantially as described, out of two disks, and a transverse pin, d, and fitted to the shaft, B, so as to periodically become loose and fast on said shaft. for the purpose set forth.

Fifth, The reel, G, in combination with the tappet shaft, B, and suspended reciprocating pulley, b, the parts being arranged substantially as described.

Sixth, The application of a crank shaft, N, to the frame, A, A', of a machine adapted for pipe driving and drilling, so that said frame may be used for operating a pump, substantially as and for the purpose described.

Seventh, Constructing the jar of a drill with flanged cutters, m, m, on it, adapted to serve as reamers, substantially as described.

53,167.—Distillation of Petroleum.—Adolph Millochan, New York City:

First, I claim the method herein specified of preparing crude oil for distillation by evaporating the benzine and other volatile substances by a coil of pipe containing heated vapors and returning the condensed benzine into the crude oil, as specified.

Second, I claim supplying the crude or partially crude petroleum in a heated state from a vessel, e, containing the same to the outer still, b, and passing the condensed products of the still, b, back into the inner still c, for the purpose and substantially as specified.

Third, I claim the cock, s, or its equivalent, in combination with the stills, b, and c, for the purposes set forth.

Fourth, I claim the vessel, e, for containing crude oil, in combination with the stills, b, and c, and condensing pipes, d, and g, for the purposes and as set forth.

Fifth, I claim the conical bottom to the inner still, applied as and for the purposes set forth.

53,104.—Mode of Raising Heat by the Combustion of Fuel of Various Kinds.—John F. Bennett, Pittsburgh, Pa.

I claim the mode herein described of producing any required degree of heat for the reducing of metallic oxides, or for other purposes in the arts where high temperatures are required, by introducing two or more blasts of oxygen or atmospheric air, either hot or cold, at such different points in the furnace as that a fresh supply of oxygen shall be introduced at or a little beyond or above the point at which the gaseous deutoxyde (or acid gas) produced by the first supply of oxygen has been reduced to the gaseous protoxide (or oxide gas) by the chemical combination of one atom of the oxygen of the gaseous deutoxide with the element used as fuel, and thus, by a series of succession of combustions, continually adding to the heat produced by the first combustion, substantially in the manner and for the purposes hereinbefore described.

53,181.—Self-Acting Blow Pipe.—Moritz Pinner, New York City:

First, I claim a self-acting or automatic blow-pipe, operating substantially as herein set forth.

Second, An automatic blowing-machine that could be used for supplying or exhausting air, or both, alternately

Third, The combination of an automatic blowing-machine with a gas jet or its equivalent, so as to produce a manageable and easily transferable flame, substantially as described.

Fourth, The combination of the devices herein described or their equivalent, for heating sad irons, stoves, and other articles, for soldering, glass-blowing, and other industrial and domestic operations for producing a blow-pipe heat, and for the various other objects and purposes hereinbefore set forth and described.

Fifth, The combination of an automatic fan with an air chamber, substantially as described.

53,232.—Well Boring Apparatus.—Thomas J. Parke, (assignor to himself, Josiah Byran, Israel Gillespie and E. A. Huntsicker), Philadelphia, Pa. Antedated Nov. 8, 1865:

First, I claim the cam wheel, H, plate, J, with its pin d, and the arm, 4, constructed and operating in combination with each other and the ropes to which a rock drill is attached, substantially as described.

Second, The screw rod, X, secured to a vibrating lever in combination with the adjustable box, O, yoke, P, and clamp plates, n, n', or their equivalents, substantially as and for the purpose specified.

Third, The box, O, with its spring, K, combined with the rod, N, its nut, and the rope, X, substantially as and for the purpose described.

53,221.—Ore Washer.—George B. Hamilton (assignor to himself and Andrew Noerr), Washington, D. C.:

First, The construction and use of the oblique agitator or hollow cylinder, so arranged and operated that the water flows from the lower to the upper end of the cylinder, substantially as described.

Second, I claim discharging the washed ore through the shaft of the cylinder, substantially as set forth.

Third, I claim the use of the runks, G, for dipping the water into the cylinder, C, substantially as specified.

Fourth, I claim the combination of the cylinder, C, with the trips, I, lever, M, and sieve, K, substantially as described.

53,143.—Shaft Coupling.—Moses Hawkins, Derby, Conn.:

I claim in the method of coupling shafting, the employment in combination of one or more feathers formed on or locked to the shaft, longitudinally, a surrounding collar adapted to embrace the shaft's end, and receive said longitudinal feathers and cross keys, passing through said collar and depression across slots in the shafts, the whole arranged to operate as specified.

53,237.—Quartz Mill.—F. Sundell (assignor to himself and Anthony Chabot), New York City:

First, I claim the rotating cylinder consisting of the heads, C, C', and slats, D, and provided with the strips or plates, d, d, plate, F, feed opening, a, springs, e, and strips, f, all arranged to operate in the manner and for the purpose herein specified.

Second, One or more screens, E, applied to the cylinder to operate in connection therewith, substantially as and for the purpose set forth.

53,117.—Pump for Deep Wells.—Robert Cornelius, Philadelphia, Pa.:

I claim the supplemental annular chamber at one or both ends of the stroke, so as to form a circumferential passage for the escape of the gas between the circumference of the pump cylinder and the enlarged chamber, substantially as described.

53,142.—Mode of Melting and Aggregating Iron Chips, Turnings, Etc.—E. C. Haserick, Lake Village, N. H.:

I claim melting iron chips, shavings or turnings and other fine particles of iron loosely put in a furnace, and preventing them from being burned and blown away, by mixing them with earth or clay and water, substantially as described.

53,161.—Covering for Hose.—Thomas McAuley, San Francisco, and M. L. Cheney, Illinoistown, Cal.:

We claim forming a hose covering by winding rope or cord spirally around a cylinder or former, and having for its support warps or strands of rope or cord passing around each spiral strand by means of a half twist, substantially as and for the purpose herein specified and set forth.

53,128.—Pump for Deep Wells.—S. H. Early, Lynchburgh, Va.:

I claim the combination with and arrangement of a pump tube, having the interior tube, G, and the openings, h, in relation to each other and to the valves of the tube, a, and packing, D, all substantially as and for the purpose described.

53,194.—Amalgamator.—John T. Staats, New York City:

I claim the amalgamation of metallic ores in a closed vessel, by the joint action of mercury, mercurial fumes and agitation resulting from the rotation of such vessel, as specified.

53,145.—Drilling Machine.—John George Hirzel, Wilmington, Del.:

I claim the combination of the wheels, pinions, slides, ways, plates, springs, screw and couplings, foot piece with slide, and drill bit with heel, as arranged and described, for drilling oval or round holes, constituting a portable metallic self-acting hand drill.

53,238.—Automatic Boiler Feeder.—J. R. Widgeon (assignor to himself and Fred. E. Frey), Bucyrus, Ohio.:

I claim the segmental cog wheel, n, in combination with the chamber, A, having ports, l, m, and with the seat, B, provided with holes, d e f g, substantially as and for the purpose described.

23,208.—Method of Burning Waste Coal.—J. D. Whelpley and Jacob J. Storer, Boston, Mass.:

We claim the use of finely comminuted fuel, or dust of fuel, mingled with the air used in supporting the combustion of the gases of furnaces and fire boxes.

53,095.—Belting for Machinery.—Stephen M. Allen, Woburn, Mass.:

I claim as a new article of manufacture, belting and banding for driving machinery, prepared and possessing the qualities substantially as herein set forth.

Special Scientific Brevities.

☞ M. Perrott has communicated to the Academy of Sciences at Paris an account of his apparatus for producing very high temperature by means of coal gas mixed with atmospheric air. He unites a certain number of Bunsen's burners, so that their flames may form a single band of flame without penetrating each other, and thus obtains a column of heated gas, of intense calorific power, in such a position that its energy may be readily controlled. Into this he introduces air in such a manner that as little heat as possible shall be lost. With an apparatus consuming two cubic meters of gas per hour, he states that he has been able to melt 670 grammes of silver, and in 30 minutes to melt and run out into bars a kilogramme of copper.

☞ The ancient conduits about Jerusalem are of wonderful structure. One, the lower level conduit, formed of stone, follows the contour of the country for twenty-five miles, passing along the bend of a depression in one case of 55 feet depth, and entering the city at an altitude of 2,450. The other, the upper level conduit, is tunneled through a hill at one part, and the blocks are so keyed together as to form a complete siphon.

☞ The Suez Canal is partially completed. A schooner having actually navigated the canal from Port Laid to Suez, a direct communication between the Mediterranean and Red Sea may be regarded as an accomplished fact. Nothing now remains but to give to the canal all the width and depth necessary to insure a free passage for large ships; to finish the dykes, ports, basins, and dockyards.

☞ An English mining engineer, recently returned from the Rocky Mountains, speaking of the mines of Colarado, says:—"If there were discovered a process by which those refractory ores could be successfully and economically desulphurized and worked, there would be gambled away in Colorado, within the next ten years, more bullion than would suffice to pay the American National debt."

☞ Some meteorites which were found at Montaban, in the south of France, in 1864, and which were quite hot when picked up, consist of minute crystals of a rare kind of iron, and of sulphur, mingled with a peaty substance, which is held together by sulphate of ammonia. The sulphate dissolves when a portion of the meteorite is put into water, and the whole mass falls to pieces.

☞ The consumption of oil as a lubricator is immense. There are some railroad companies whose annual expenses are more than $25,000 for lubricators alone. A single manufacturer in England (Young) testified in court to having manufactured and sold over 400,000 gallons of lubricating oil in one year, at about one dollar per gallon. This oil was distilled from coal.

☞ The *Journal Du Havre* states that during the violent hurricane of the 11th, two hundred enormous blocks of stone, placed in front of the breakwater at Cherbourg to protect it from the action of the sea, were lifted by the waves and thrown over the wall into the harbor. Forty cannon planted on the pier were thrown into the sea.

☞ Stone is now sawn in France with great rapidity and economy by means of a perforated disk of iron on which a coating of lead has been cast, the perforations serving to connect and bind the plates of lead thus formed on the two sides of the disk. The lead is kept well covered with emery, which falls on it from a reservoir above.

☞ The United States Senate has just passed a bill giving to a New York Company the sole right to lay a cable from Florida to Cuba, on a condition that it is done within three years. It is understood that the parties will complete it at once, and extend the line down the entire length of the Southern American States.

☞ Coal was first used as fuel in London in the latter part of the thirteenth century; but the smoke was considered so injurious to the public health that Parliament petitioned King Edward I. to prohibit its burning as an intolerable nuisance. He complied, and issued a proclamation against it.

☞ The following is a good method of bronzing tin castings:—When clean wash them with a mixture of one part each of sulphate of copper and sulphate of iron in twenty parts of water; dry and wash again with distilled vinegar eleven parts. When dry polish with colcothar.

☞ Wheatstone, in 1834, ascertained the velocity of an electrical current passing through a copper wire to be 288,000 miles per second. Walker, in America, with iron wire, found the speed to be 18,780 miles. O'Mitchell, also, experimenting on some iron wire, gave the speed at 28,524 miles.

☞ An interesting volume of African exploration is announced in Germany, compiled from the papers of the late Wilhelm von Harnier, who visited Africa in 1860, and confined his explorations chiefly to the countries between Chartum and Zanzibar. "Reise am Oberen Nil."

☞ The U. S. Ordnance Department declares that ice two inches thick will bear infantry; four inches, cavalry with light guns; six inches, heavy field guns; and eight inches, the heaviest siege guns with 1,000 pounds weight to the square inch.

☞ A magnet, the lifting force of which was 220 pounds when the armature was in contact, sustained 90·6 pounds when the armature was ·250 inches distant, and 40·5 pounds when ·50 of an inch distance 4-5 of the power are lost.

☞ Another important addition to our geographical knowledge is announced as nearly ready, in five large octavo volumes, under the title of "Die Voker des Östlichen Asien, in Studien und Reisen," by Doctor Adolph Bastien.

☞ It is said that the burning of immense tracts of peat beds in Northern Germany is the cause of the peculiar dry fogs which at particular periods sweep over considerable districts on the Continent.

☞ The decomposition of carbonic acid by plants is proportionate to the intensity and duration of the light to which they are exposed. The quantity absorbed is directly as the force of vegetation.

☞ M. de Mortillet has published in the *Sud-Est*, a Grenoble paper, a curious remedy for the sting of a dangerous insect. It is the application of the wax of the ear to the injured part.

☞ An examination into the condition of the steam boilers in New York City reveals the fact that out of 4,207 boilers, 130 were found to be defective.

☞ The gyroscope was invented by M. Foucault, and first attracted attention from its power of rendering the rotation of the earth visible.

☞ The Pacific ocean covers seventy-eight millions of miles; the Atlantic twenty-five millions.

Horace Greely on Gold, Silver and Iron.

Upon his recent installation as President of the American Institute, Horace Greely said:

A word as to our Mineral resources. We are now producing somewhat less than $100,000,000 of Gold and Silver per annum from our mines; which is more than the annual product of the whole world forty years ago—probably more than was produced in the palmiest days of South American and Mexican gold-mining. Yet, large as the amount is, it is not a beginning. That it will be trebled within the next ten years, provided our great Pacific Railroad shall meantime be completed, few will doubt who have any acquaintance with the facts. I trust the attention of the Institute will be given to this vast and growing interest—that we shall be able in some way to aid its development—and that in time the most complete and instructive cabinet of American Minerals in existence will be that of the American Institute. I would have specimens of the Precious Metals from every locality; but not of these only. There should be some place where the chemist, the prospector, the mine owner, the metallurgist, could compare critically the iron ore of Lake Champlain with that of Western Connecticut and that of Lake Superior, so as to determine wherein they agree and wherein they differ. In the first great World's Exposition of Products at London, 1851, I was not asked for specimens of California Gold; but the most eminent authority in British Geology asked me for samples of our Lake Superior Iron—then newly discovered—and I was able, on my return, to obtain and send them.

Recent Discoveries of Plumbago.

This mineral, which has hitherto ruled quite high in the markets of the world, for the reason that a good quality has heretofore been found in only a few localities on the globe, is now being found in large quantities in various parts of the earth. Large dicoveries of this valuable mineral are stated to have been made in the island districts of the Cape of Good Hope. A sample of eight bags has already been shipped to England, in order to test its value in the home market. It is found in various parts of the Eastern States; and a new and extensive deposit is said to have been recently discovered in the town of Richmond, Maine. Reports pronounce the mine one of the best in the United States. It is also found in quite a number of localities in California. Large quantities, and of a very good quality, are found within eight miles of a good shipping point in Los Angeles County. It occurs in great abundance in Mariposa County, where a new process has recently been adopted for its purification, which it is believed will prove a valuable discovery, and still further reduce its commercial value. It is found also and worked at Roger's Rock, Ticonderago, and Fiskill Landing, in Dutchess Co., N. Y., and in Brandon, Vt. A good article is found in Greenville, L. Canada, and lately other localities in Canada East show considerable evidence of it. In Buchingham, near Ottawa City quite a large district contains it in unusual abundance. Some samples which we have seen are exceedingly fine and pure, both granular and foliated, and a very recent discovery of an extensive vein bids fair to create a sensation if present reports are substantiated.—*Exchange.*

SPECIAL NOTICE.—As many failures in mining operations have resulted from neglect to provide machinery adapted to the proper reduction of ores, and persons are too apt to imagine that such machinery can be purchased here and transported to San Francisco at less cost than it can there be procured, we take the opportunity of suggesting to all such an early visit to Mr. Cyrus Palmer, of the San Francisco Miners Foundry, who is in this city—see advertisement in another column.

PROSPECTUS.

THE NECESSITY FOR A THOROUGHLY RELIABLE medium of information upon MINING MATTERS has been seriously felt by those interested in the mines and mills of the United States. THE AMERICAN JOURNAL OF MINING supplies that want.

It is under the editorial control of GEORGE FRANCIS DAWSON, whose reputation is too well established to require, on our part, any comment.

There is amply sufficient capital invested in the JOURNAL OF MINING to insure its complete success.

THE JOURNAL OF MINING contains—or will contain in future issues:

Seventeen wide, solid columns of condensed, summarized Mining (including Petroleum) intelligence from all parts of the American Continent.

Four to Five Columns of Editorial articles upon topics of interest to the mining community.

Two to Four Columns of original and selected papers on Mineralogy, Geology, Metallurgy, Assaying, Mining and other Scientific Subjects.

Five to Ten Columns of judiciously selected miscellaneous articles relative to mining, the kindred sciences, etc.

Carfully Compiled Directories of Petroleum, Gold, Silver, Copper and other American Mining Companies.

Latest Quotations of Mining and Petroleum Stocks in the New York, Philadelphia, Boston and San Francisco Markets.

Nevada Mining Stocks reported by Trans-continental Telegraph.

Latest Reports of the London and New York Metal Markets; with lists of Copper sales at Swansea and Redruth, England.

A valuable Table, showing the current market values of the various classes of Federal Securities.

A convenient list of the New York current prices of chemicals and implements used in Assaying.

A reliable list of Standard Works on Mineralogy, Geology, Metallurgy, Assaying, Mining, etc.

THE JOURNAL OF MINING also publishes reports of scientific experts relative to noteworthy mines and works; and beautifully illustrated Descriptions of new processes and recent inventions in Mine and Mill machinery. It is printed in the best possible manner, upon a very superior quality of paper, and forms a compendium of trustworthy information that must prove invaluable to mine-owners, practical miners, Mineralogists, Geologists Metallurgists and others.

Each number of the JOURNAL OF MINING comprises sixteen pages of interesting and valuable reading matter; two volumes per annum, each containing Four hundred and sixteen pages, forming an excellent and almost indispensable work of reference for all interested in Mining, Milling, etc.

☞ Published every Saturday, at 12 o'clock, M.

TERMS:

SUBSCRIPTION.		ADVERTISING.	
Per annum, one copy -	$4 00	One Line [Nonp] 1 inser'n.	0 50
Six months, one copy -	2 25	One Square, 10 lines, 1 do.	2 00
Three months, one copy -	1 25	One Square, do. 4 do.	5 00
Single copy - - - -	0 10	One Square, do. one year.	40 00

Canadian Subscribers 25 cents extra for postage.

☞ Specimen Copies sent free.

Address WESTERN & COMPANY.

No. 37 Park Row, and 145 Nassau St., New York City

IMPORTANT TO MINERS.

Every description of Analysis and Assays carefully attended to, and returns promptly made, by

WESTERN & COMPANY.

No. 37 Park Row, and 145 Nassau St., New York City.

To Inventors and Others.

The proprietors of the AMERICAN JOURNAL OF MINING have connected with their establishment, Artists of experience and skill in

DESIGNING,

WOOD-ENGRAVING, and

LITHOGRAPHY.

Machinery, Buildings, Landscapes, etc., Designed and Engraved or Lithographed from a photograph or a plain comprehensive sketch, or from the object itself. Specimens of work ready for inspection.

Inventors desirous of applying for Patents on their own account can have drawings for the Patent Office carefully and accurately executed.

AT VERY MODERATE RATES.

JOB PRINTING.

Plans, Specifications, Bill-Heads, Receipts, Letter-Heads, Show-Bills, Cards, Circulars, etc., etc.,

Executed at the office of the AMERICAN JOURNAL OF MINING.

WESTERN & COMPANY,

No. 37 Park Row, and 145 Nassau St., New York City.

P. O. Box 5,969.

The American Bureau of Mines,

64 BROADWAY, NEW YORK.

Mines, mineral lands and ores, examined and reported upon. Competent engineers furnished to Mining Companies.

BOARD OF TRUSTEES :

GEO. D. H. GILLESPIE.
FRANCIS TOMES, JR.
P. C. CALHOUN, President Fourth National Bank.
CHARLES AUG. DAVIS.
FRED. SCHUCHARDT, of F. Schuchardt & Sons.
E. CAYLUS, of Caylus, DeRuyter & Co.
EUGENE KELLY, of Eugene Kelly & Co.
J. F. SCHEPELER, of Schepeler & Co.
CHARLES HOLZAPFEL, of Troost, Schmidt & Co.
WILLIAM F. DRAKE, of Drake Brothers.
GEORGE E. DUNNING, Supt. of U. S. Assay Office.
R. E. MOUNT, Jr.
THEODORE GENTIL, of Gentil & Phipps.

BOARD OF EXPERTS :

F. A. P. BARNARD, S.T.D., LL.D., President of Columbia College and School of Mines, President of the Board.
JAMES P. KIMBALL, Ph.D., Mining Engineer, Vice President of the Board.
JOHN TORREY, M.D., LL.D., Assayer U. S. Assay Office, New York.
JUSTUS ADELBERG, Ph.D., Mining Engineer and Metallurgist, of Adelberg & Raymond.
ALEXANDER TRIPPEL, Ph.D., Metallurgical Engineer.
FRANCIS L. VINTON, E.M., Professor of Mining Engineering, School of Mines, Columbia College.
THOMAS EGLESTON, Jr., A.M., E.M., Professor of Mineralogy and Metallurgy, School of Mines, Columbia College.
CHARLES F. CHANDLER, Ph.D., Professor of Analytical and Applied Chemistry, School of Mines, Columbia College.
C. ELTON BUCK, Esq., Chemist and Metallurgist, of Partz & Buck.
W. P. TROWBRIDGE, A.M., Mechanical Engineer, Vice-President of the Novelty Iron Works.
HERMAN CREDNER, Ph.D., Geologist and Mining Engineer.
R. W. RAYMOND, Esq., Mining Engineer and Metallurgist, of Adelberg & Raymond, Secretary of the Board.

Consultations afforded on all mining, metallurgical and chemical questions, at the office of the Bureau (Rooms 19, 20 and 21), 64 and 66 Broadway. GEO. D. H. GILLESPIE, President.
DRAKE DEKAY, Secretary.

IMPORTANT TO MINING COMPANIES intending to erect Machinery in California, Nevada, Idaho, Montano, Arizona, Mexico, or any part of Pacific coast.

The fact being indisputable that many of the failures in mining operations are caused by not having machinery adapted to working the ore, it is of the first importance to start right on this point.

MR. CYRUS PALMER, one of the proprietors of the Miner's Foundry, San Francisco, has lately arrived, and will remain in New York and vicinity for some months, and is prepared to take contracts to furnish all kinds of mining machinery of the most approved style at short notice, delivered in San Francisco, or at any of the mines on the Pacific coast. He will also, if required, contract to build mills at the mines, and put them in complete running order.

Mr. Palmer has just left the Pacific coast, and is therefore, acquainted with the most approved machinery in use for reducing ore and saving the precious metals. Mr. P. has not only been actively engaged for the last ten years in manufacturing mining machinery, but has had large experience in working mines and reducing ores. On application to his address, 25 Nassau street, by letter or otherwise, he will be pleased to give any information required in regard to mining or other machinery, gratis, to any company, whether they wish to contract or not.

Mr. Palmer refers to the following companies for whom the Miners' Foundry have built mills the past year :

Knickerbocker and Nevada, 70 Ceder street ; Lincoln Company, 80 Broadway ; Cosmos Company, 158 Broadway ; Connecticut and Nevada Company, 47 Liberty street ; Cobden Company, 17 Broad street ; New York Company, 80 Broadway ; Tarshish Company, 80 Broadway ; Washington, 80 Broadway ; Mettacom Company, 144 Chambers street ; Consolidated Company, 157 Broadway.

Mr. Palmer can be found at the office of R. H. Vance, Esq., 25 Nassau street, corner Cedar, from 11 to 12 o'clock, daily.

INCRUSTATION OF
STEAM BOILERS.

This greatest of evils in the use of steam is entirely prevented by the "Anti-Incrustable Powder" of

H. WINANS, 11 Wall Street, New York.

INVENTED AND INTRODUCED IN 1855.

Now ten years in successful operation in over 6,000 boilers, without injury, and saving many times its cost in fuel and repairs.

A clean boiler generates steam more freely, and will outlast ten dirty or incrusted ones.

JULIUS G. POHLE, M.D.,
FORMERLY OF, AND SUCCESSOR TO,
Dr. JAMES R. CHILTON & CO.,
Analytical and Consulting Chemist,

No. 489 BROADWAY, - - - - - - NEW YORK
(N. W. COR. OF BROOME STREET.)

Analyses and Assays made of Ores of Gold, Silver, Quicksilver, Lead, Copper, Manganese, Nickel, etc., etc. ; Minerals, Alloys, Petroleum, Commercial Articles, etc.

GOMEZ SUBMARINE
ELECTRIC FUSE,
For Oil Wells, Mines, Blasting, Military and Naval War purposes.
124 BLEECKER STREET, NEW YORK.

New York Rock Drill Company,

E. M. BARNUM (*late of Oregon*), PRESIDENT,
G. A. GARDNER, SECRETARY.

OFFICE, till May, No. 152 BROADWAY.

This company are prepared to fill orders for Drilling Machines for all kinds of Rock work, for outside work, and for Mining.

Prices for Hand Machines for Mining		$200	and $250
" Power " "		450	" 850
" " "	Railroad and Canal		
Open-cuttings		1000	" 3000

These are the only machines that have done regular work in this Country, and are the most Simple, Compact and Economical. We invite the closest scrutiny. A full sized Mining Drill can be seen daily in operation at the Machine Shop of STERLING & KERR, No. 344 and 346 West 24th street, West of 10th avenue.

TAYLOR & SCOTT,
Mining Engineers and Surveyors,
48 PINE STREET, NEW YORK,

Will examine and report upon Copper, Lead, Coal, and other Mines ; furnish Plans, and, if not at too great a distance from the city, will undertake the management of the same. Surveying of every description attended to.

REFERENCES : Prof. A. A. Hayes, Boston ; Black River Mining Co., Boston ; H. Williams, Esq., M. E., Canada ; Lionel Brough, Esq., Gov. Ins. Mines, London, Eng. ; New Hampshire Silver Lead Co. ; S. L. French, Esq., New York ; St. Flavien Mining Co. ; R. C. Hawkins, Esq., New York, and others.

QUICKSILVER.

150 Flasks landing, and
250 do. to arrive.

For sale, in lots to suit, by
DEGEN, TAFT & LEE, 62 William St., N. Y.

JAY COOKE & CO.,
BANKERS,

In connection with our houses in Philadelphia and Washington, we this day open an office at No. 1 Nassau street, corner of Wall, in this City.

Mr. EDWARD DODGE, late of CLARK, DODGE & CO., New York ; Mr. H. C. FAHNESTOCK of our Washington house, and Mr. PITT COOKE, of Sandusky, Ohio, will be resident partners.

We shall give particular attention to the purchase and sale of GOVERNMENT SECURITIES, and to orders for purchase and sale of STOCKS, BONDS and GOLD.

JAY COOKE & Co.

New York, March 1, 1866.

THE ANNUAL REPORT OF THE DIRECTORS OF THE NINTH NATIONAL BANK TO THE STOCKHOLDERS.

NEW YORK, January 9, 1866.

The election was held this day, and the undersigned were unanimously re-elected Directors for the ensuing year. For this renewed and flattering expression of confidence on the part of the stockholders, the Directors return their thanks. The following is a STATEMENT OF THE CONDITION OF THE BANK, TUESDAY MORNING, January 2, 1866.

RESOURCES.

Loan and Discounts	$3,596,645 63
Government Securities	1,884,625 54
Furniture and Fixtures	13,000 00
Specie and Legal Tender	2,382,294 66
Checks and Bills on other Banks	959,171 71
Due from Banks and Bankers	756,111 23
	$9,591,848 77

LIABILITIES.

Capital Stock	$1,000,000 00
Surplus Profit after Paying Dividends	192,294 56
Dividends unpaid	53,336 58
Circulation	894,940 00
Deposits	7,451,367 63
	$9,591,848 77

In explanation we will say, that during the fiscal year, we have paid two Dividends of FIVE per cent. each, and the government taxes. And now exhibit an actual SURPLUS, over and above all losses, expenses and dividends, of NINETEEN per cent. on the CAPITAL STOCK. From the earnings of the last six months we have applied $50,000, that is FIVE per cent. on the Capital Stock, to the extinguishment of the premium account ; and although the Stockholders do not get this Five per cent. in a dividend, yet it is represented in the United States Stocks held by the Bank. During the past year, your Bank became a member of the New York Clearing House Association, by an unanimous vote of that body. We are able to report, that your Bank has well fulfilled its patriotic mission, of aiding the placing of the Government Loans. The amount of subscriptions to the 7-30's was Forty-three Millions Two Hundred and Sixty-two Thousand Three Hundred Dollars ($43,262,300), this being the largest susbcription taken by any one Bank. To appreciate this result, we would remark, that had nineteen other banks taken each the same amount, the whole loan would have been taken by the twenty. This gives us opportunity to say, that having served our beloved country in its hour of peril, we desire now to turn all our efforts to the securing, in all legitimate and honorable ways, the increase of our business with the community ; to that end we invite the cordial co-operation of each Stockholder. Our organization is now so well perfected as to give us all much satisfaction, and the relief from so much government business, gives our officers time to attend to individual dealers. Our deposits have been large, at times, during the year, reaching almost Twenty-one Millions of Dollars ; but that was during the time the people were rushing to us with patriotic zeal, to offer their money to their country ; now we can take the deposits of the business community ; and we hold ourselves in readiness to DISCOUNT GOOD BUSINESS PAPER, payable at short dates. Such paper, being based on the sale of commodities, is, in our opinion, the safest business a bank can do.

DIRECTORS.

WILLIAM A. KOBBE,
THOMAS A. VYSE, Jr.,
GEO. A. WICKS,
BARNET L. SOLOMON,
GEO. A. FELLOWS,
SOLOMON L. HULL,
CHAS. MINZESHEIMER,
J. O. WHITEHOUSE,
JOSEPH U. ORVIS.

JOHN T. HILL, Cashier. JOSEPH U. ORVIS, President.

WINCHESTER'S
HYPOPHOSPHITES

THE SPECIFIC REMEDY FOR

CONSUMPTION,

NERVOUS DEBILITY,

And all Disorders of the Lungs, Nervous and Blood Systems.

The success of the Hypophosphites during the past ten years, in the Cure of that greatest scourge of the race, CONSUMPTION, is "unparalleled in the annals of medicine." The new and thoroughly Scientific Remedy acts with Invariable Efficacy in all stages of tubercular diseases. It relieves the cough, checks the perspirations, subdues the chills and fever, diminishes the expectoration and promotes refreshing sleep. "All the General Symptoms Disappear with a Rapidity which is really Marvellous." CURE is the rule—DEATH the exception.

Their beneficial effects are equally PROMPT and CERTAIN in all derangements of the Nervous and Blood Systems—being unsurpassed as a Nervous Tonic, and generator of new and healthy blood ; whilst for cases of General Debility, Loss of Strength, Flesh, and Appetite, Dyspepsia, Neuralgia, Paralysis, Chronic Bronchitis, Asthma, Scrofula, Chronic Diarrhœa, is the most efficacious treatment known. A Fair Trial is a Certain Cure. (Circulars free.)

PRICES : In 7-oz. and 16-oz. bottles, $1 and $2 each. Six small or three large bottles for $5, by express. Sold by all respectable druggists, and at the sole general depot, wholesale and retail, by
J. WINCHESTER & CO.,
36 John Street, N. Y.

THE
SPECIFIC PILL

A PROMPT AND CERTAIN REMEDY FOR

Spermatorrhea, or Seminal Weakness,

Or Involuntary Nightly or Daily Loss, however caused, or however severe ; while they will speedily correct those Morbid Conditions arising from the original disease or from Secret Vice.

THE SPECIFIC PILL is equally suited to the treatment of every species of Genital or Urinary Irritability, "Lime," or "Brick-dust," deposites in the Urine, "Milky" discharges and Weakness of the Kidneys.

PROFESSIONAL OPINIONS : "I have used your Specific Pill in many cases of Spermatorrhœa with the most perfect success."—J. MILTON SANDERS, M. D., L. L. D.

"I have cured very severe cases with from six to ten Boxes of your Specific Pill."—B. KEITH, M. D.

Price : $1 per box. Six boxes for $5, by mail. Address
J. WINCHESTER & CO.,
36 John Street, N. Y.

THE
GOLDEN
TABLET

AN INFALLIBLE

NEUTRALIZER OF ALL SUPERFICIAL POISONS, OR VIROUS.

This is one of the grandest discoveries in medical science of which the present century can boast. It instantly neutralizes, destroys and renders perfectly harmless every species of poisonous or infectious virous affecting either the external skin, or the internal mucous membrane.

THE LOCATION, CHARACTER OR NAME

of the disorder is of no importance, so that it can be reached by Washing, Gargling or Injecting. The GOLDEN TABLET is a sovereign remedy for Itch, Salt Rheum, Hives, Prickly Heat, and all other cutaneous eruptions ; the poison of Oak, Ivy, Sumach ; bites of Venomous Insects ; Piles in all their forms ; Sore Lips, Sore Eyes, Sore Nipples, Old Sores, Catarrh, Ulcerated Throat, Diptheria in its first stages ; Female Weaknesses of every kind—in short, for every species of Inflammation or Virulent Exudations and Humors of the Internal Mucous Membrane, or External Skin. Communications confidential, and advice gratis.

THE GOLDEN TABLET

is, from its many beneficent uses, Woman's Best Friend, and Man's Surest Safeguard. ☞ Every adult, of both sexes, will find it indispensable to them, as will be better understood from a perusal of the Circular, which is sent free to all. Irritation almost instantly allayed in every instance.

PRICE : $1 per Box ; six Boxes, $5, by Mail. Sold only at the General Depot of "WINCHESTER'S HYPOPHOSPHITES" (for Consumption and Nervous Debility), by the Sole Agent,

J. WINCHESTER,
36 John Street, N. Y.,
To whom all orders should be addressed.

SCHOOL OF MINES,

COLUMBIA COLLEGE,

Co . 49th Street and 4th Avenue, New York.

COMMITTEE OF TRUSTEES:

Name.	*Residence.*
WILLIAM BETTS, LL.D., CHAIRMAN	122 E. 30th Street.
EDWARD JONES	75 Fifth Avenue.
GEORGE T. STRONG	74 E. 21st Street.
JOHN TORREY, M.D., LL.D.	Columbia College.
LEWIS M. RUTHERFURD	175 Second Avenue.
FREDERICK A. P. BARNARD, S.T.D., LL.D.	Columbia College.
HAMILTON FISH, LL.D.	134 E. 17th Street.

ASSOCIATE MEMBERS.

CORNELIUS R. AGNEW, M.D.	394 Fifth Avenue.
GEORGE C. ANTHON	19 W. 30th Street.
SAMUEL W. BRIDGHAM	24 Waverley Place.
LEWIS L. DELAFIELD	475 Fifth Avenue.
FRANKLIN H. DELANO	39 Lafayette Place.
WILLIAM E. DODGE, JR.	Madison Avenue.
JACOB P. G. FOSTER	56 W. 14th Street.
NATHANIEL P. HOSACK	15 W. 21st Street.
ROBERT L. KENNEDY	99 Fifth Avenue.
EDWARD G. LUDLOW, M.D.	49 E. 23d Street.
BARON ROBERT OSTENSACKEN	46 Clinton Place.
HOWARD POTTER	Astoria.
TEMPLE PRIME	113 W. 14th Street.
PERCY R. PYNE	44 South Street.
JAMES N. RENWICK	55 Ninth Street.
OTIS D. SWAN	29 Lafayette Place
LUCIUS TUCKERMAN	22 Washington Pl.
GEORGE C. WARD	Staten Island.

OFFICERS.

FREDERICK A. P. BARNARD, S.T.D., LL.D., Columbia College.
PRESIDENT.

THOMAS EGLESTON, JR., A.M., E.M. ..... 10 Fifth Avenue.
Professor of Mineralogy and Metallurgy.

FRANCIS L. VINTON, E.M. ..... 5 Grace Court, Brooklyn Heights.
Professor of Mining Engineering.

CHARLES F. CHANDLER, PH. D. ..... 158 E. 33d Street.
Professor of Analytical and Applied Chemistry.
Dean of the Faculty.

JOHN TORREY, M.D., LL.D. ..... Columbia College
Lecturer on Botany.

CHARLES A. JOY, PH. D. ..... Columbia College.
Professor of General Chemistry.

WILLIAM G. PECK, LL.D. ..... 29 Tenth Street.
Professor of Mechanics and Mining Surveying.

JOHN H. VAN AMRINGE, A.M. ..... Ravenswood.
Professor of Mathematics.

OGDEN N. ROOD, A.M. ..... 128 E. 52d Street.
Professor of Physics.

ALBERT HUNTINGTON CHESTER ..... 33 W. 44th Street.
Assistant in Mineralogy.

HENRY B. CORNWALL, A.B. ..... 508 Seventh Avenue.
Assistant in General Chemistry.

MILOS KROLIKOWSKI, C.E. ..... 176 Bleecker Street.
Assistant in Drawing.

ALEXIS A. JULIEN, A.M. ..... 81 E. 23d Street.
Assistant in Analytical Chemistry.

EDWARD W. ROOT, A.B. ..... 205 W. 27th Street.
Assistant in Analytical Chemistry.

GEORGE M. MILLER, A.M. ..... 165 W. 14th Street.
Assistant in Assaying.

Course of Instruction.

FIRST YEAR.

FIRST SESSION.

MATHEMATICS; Analytical Geometry of two and three dimensions.
GRAPHICS; Elementary Projections and Drawings.
PHYSICS; Heat and the Steam Engine.
INORGANIC CHEMISTRY; Non-metallic elements.
QUALITATIVE ANALYSIS; Behavior of bases and acids with reagents.
MINERALOGY; Crystallography and the use of the blowpipe.
GERMAN LANGUAGE.
FRENCH LANGUAGE.

SECOND SESSION.

MATHEMATICS; Differential and Integral Calculus.
GRAPHICS; Projections, Stone-Cutting, and Drawing.
MINING SURVEYING; Surface and Underground Surveying.
PHYSICS; Electricity and Magnetism.
INORGANIC CHEMISTRY; Metals.
QUALITATIVE ANALYSIS; General Testing.
STOCHIOMETRY; Problems on Equivalents, Reactions, etc.
MINERALOGY; Blowpipe Analysis.
GERMAN LANGUAGE.
FRENCH LANGUAGE.

SECOND YEAR.

FIRST SESSION.

MECHANICS; Mechanics of Solids, Liquids, and Gases.
MINING ENGINEERING; Machines.
QUANTITATIVE ANALYSIS; Analysis of substances of known composition.
METALLURGY; Copper and Lead.
MINERALOGY; Description and Determination of Minerals.
GEOLOGY; Physiographic Geology, Lithology, and Historical Geology (begun).

SECOND SESSION.

MINING ENGINEERING; Machines.
QUANTITATIVE ANALYSIS; Analysis of ores, slags, technical products, etc.
METALLURGY; Lead, Silver, Zinc, Gold, Mercury, Nickel, Cobalt, and Platinum.
MINERALOGY; Description and Determination of Minerals.
GEOLOGY; Historical Geology (Concluded), and Dynamical Geology.
BOTANY.

THIRD YEAR.

FIRST SESSION.

MINING ENGINEERING; Exploitation of Mines.
QUANTITATIVE ANALYSIS; Analysis of ores, slags, technical products, etc.
METALLURGY; Fuels, Furnaces, Iron.
ASSAYING; Ores of Lead, Silver, and Gold.
CONSERVATION OF FORCE.

SECOND SESSION.

MINING ENGINEERING; Exploitation of Mines.
QUANTITATIVE ANALYSIS; Analysis of ores, slags, technical products, etc.
METALLURGY; Iron and Steel.
ASSAYING; Ores of Copper, Tin, Antimony, Zinc, Nickel, Mercury, etc., and Bullion.
GEOLOGY; Theory of Veins.
CONNECTION OF SCIENCES.

Requirements for Admission.

Students who wish to enter the school must not be less than sixteen years of age.

Candidates who enter for a degree must pass a satisfactory examination in Algebra, Geometry, and Trigonometry.

Candidates for advanced standing are examined in all the studies previously pursued by the classes which they propose to enter.

Arrangements can be made at the school for instruction in the preparatory studies.

The regular examinations for admission are held annually on the Monday and Tuesday before commencement, and on the Friday and Saturday preceding the first Monday in October. Candidates will, however, be examined during the session, whenever they may present themselves.

Those who are not candidates for a degree may, by a special arrangement, pursue any of the branches taught in the school, without previous examination.

Expenses.

The fee for the full course is one hundred and sixty dollars per annum.

Those who devote the whole of their time to chemistry and assaying, are charged one hundred and sixty dollars per annum for the use of the Laboratory. These fees are payable, one-half on the first day of each session. A charge of five dollars is made for the diploma.

Students are supplied with apparatus, and charged for what they fail to return in good order.

Calendar.

1865.	November 15.	First session begins Wednesday.
1866.	January 26.	First session ends Friday.
	February 15.	First year students return Thursday.
	March 1.	Second and third year students return Thursday.
	June 1.	Second session ends Friday.
	June 25, 26.	Examination for admission, Monday and Tuesday.
	Sept. 28, 29.	Examination for admission, Friday and Saturday.
	October 1.	First session begins Monday.

IMPORTANT AND VALUABLE WORKS

ON

MINING, MINERALOGY, GEOLOGY AND METALLURGY.

ANSTED'S Gold Seeker's Manual. 1 vol. 12mo, cloth... $ 1 75

ANTISELL.—The Manufacture of Photogenic or Hydro-Carbon Oils, from Coal and other Bituminous substances, capable of supplying Burning Fluids. By Thomas Antisell, M. D. 1 vol 8vo. 1 50

BUCKLAND (Rev. Wm.)—Geology and Mineralogy. 2 vols. 9vo, hf. cf 20 00
2 cloth. 8 vo, cloth 10 00

BLAKE (Wm. P.)—Report of a Geological Reconnoissance in California. 1 vol. 4to, illst. 10 00

COQUAND.—Traite des Roches. 1 vol. 8vo, hf. mor..... 5 2

DANA'S Manual of Mineralogy. 1 vol. 8vo. 5 50
Text Book of Geology. 1 vol. 12mo. 2 00

DEGOUSSEE.—Guides des Sondeur et des Sondages. 2 vols. and Atlas, half mor 19 50

DUFRENOY.—Mineralogie. 5 vols. 8vo. 20 25

FOSTER HND WHITNEY.—Report of the Geology of the Lake Superior Land District. The Iron and Copper Regions. 2 vols. 8vo, and maps (scarce)..... 10 00

FEUTCHWANGER.—A Treatise on Gems. 1 vol. 8vo, cloth..... 1 50

EAIRBAIRN.—Iron: its History, Properties, and Processes of Manufacture. By Wm. Fairbairn, C. E., LL. D. 1 vol. 8vo. New Edition 3 75

GREENWELL (G. C.)—A Practical Treatise on Mine Engineering. Handsomely illustrated. 1 vol. 4to, hf. mor. 27 50

GOODYEAR'S Translation. A Treatise on the Assaying of Copper, Lead, Silver, Gold and Mercury, from the German of Ta. Bodeman and Bruno Kerl. 1 vol. 12mo, cloth. 2 50

HUMBLE.—Dictionary of Geology and Mineralogy. Third edition. 1 vol. 8vo, cloth..... 3 50

HOSKOLD'S Practical Treatise on Mining Land and Railway Surveying, Engineering, &c. 1 vol. 8vo, cloth.. ... 15 00

JACOBS.—Precious Metals. 2 vols. 12mo. 12 00

KURR'S Mineral Kingdom. 1 vol. 4to, colored plates ... 15 75

KING (C. W.)—Natural History, Ancient and Modern, of Precious Stones and Gems. 1 vol. 8vo, cloth.. .... 10 50

KUSTEL.—Nevada and California Processes of Silver and Gold Extraction, for general use, and especially for the Mining Public of California and Nevada; also, a description of the General Metallurgy of Silver Ores. By Guido Kustel, Mining Engineer. Illustrated by accurate engravings. 1 vol. 8vo, cloth..... 8 00

LAMBORN.—Rudimental Treatise on the Metallurgy of Copper. 1 vol. 12mo, limp cloth. Illustrated 1 00

——— Rudimentary Treatise on the Metallurgy of Silver and Lead. 1 vol 12mo, limp cloth. Illustrated 1 00

LONG (Major S. H.) Account of an Expedition from Pittsburgh to the Rocky Mountains, performed in the years 1819 and 1820. Compiled by Edwin James, Botanist and Geologist for the Expedition. 4 vols. 12mo, hf. cf 50 00

McCORMICK.—Arizona; its Resources and Prospects. Pamphlet, 32 pp. with map. By R. C. McCormick (secretary of the Territory). 00 25

MITCHELL'S Manual of Practical Assaying. 1 vol. 8vo, cloth 10 50

MAKINS.—A Manual of Metallurgy, more particularly of the Precious Metals, including the Methods of Assaying them. By. G. H. Makins. 1 vol. 12mo, cloth. Illustrated by upwards of 50 engravings..... 3 50

MAP of the "Reese River" Mining District..... 2 00

MULLAN'S Miner's and Traveller's Guide to Oregon, Washington, Idaho, Montana, Wyoming, and Colorado, via the Missouri and Columbia Rivers. 1 vol. 12mo. ... 2 00

OVERMAN (Frel.)—A Treatise on Metallurgy; comprising Mining, and General and Particular Metallurgical Operations. 1 vol. 8vo, cloth..... 8 00

——— The Manufacture of Iron in all its Various Branches; including a description of Wood-cutting, Coal-digging, etc. 1 vol. 8vo, cloth. (Scarce)..... 12 00

PIGGOT.—The Chemistry and Metallurgy of Copper. By A. Snowden Piggot, M. D. 1 vol. 12mo, cloth..... 1 50

PHILLIPS AND DARLINGTON.—Records of Mining and Metallurgy; or, Facts and Memoranda for the use of Mine Agents and Smelters. By J. A. Phillips and John Darlington. 1 vol. 12mo, cloth 2 50

PERCY (John).—Metallurgy; the Art of Extracting Metals from their Ores, and Adapting them to various Purposes of Manufacture. Vol. 2, Iron and Steel. 1 vol. 8vo, cloth..... 21 00

SCOFFERN'S Useful Metals and their Alloys. 1 vol., cloth 3 75

SOPWITH (T.)—A Treatise on Isometrical Drawing as applicable to Geological and Mining Plans. 1 vol. 8vo, cloth (very scarce)..... 15 00

SWEET (S. H.)—Special Report on Coal; showing its Distributions, Classification and Cost, delivered over Different Routes to various Points in the State of New York, and the Principal Cities on the Atlantic Coast. By S. H. Sweet, late Deputy Engineer and Surveyor of the State of New York. Transmitted to the Legislature, March, 1865. 1 vol. 8vo, cloth 3 00

TAYLOR.—Statistics of Coal; including Mineral Bituminous Substances employed in the Arts and Manufactures. Second Edition. By R. C. Taylor. 1 vol. 8vo, cloth. .. 6 00

THURAN (W.)—The Iron Manufacture of Great Britain, Theoretically and Practically considered; including Descriptive Details of the Ores, Fuels, and Fluxes employed, the Preliminary Operation of Calcination, the Blast, Refining, and Puddling Furnaces, Engines, Machinery, etc. Third edition, revised. Illustrated. 1 vol. 4to 20 00

WHITNEY.—A Geological Survey of California. Report of Field Work, from 1860 to 1864. By J. D. Whitney. 1 vol. quarto. 6 00

WHITNEY (J. D.)—Silver Mining Regions of Colorado. paper..... 25 00

Together with a Large Stock of Engineering and Mechanical Books.

For Sale by

D. VAN NOSTRAND,
192 BROADWAY.

☞Catalogues of Scientific works sent post-paid on application.